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## ORIGINAL ARTICLES.

### REPORT OF A CASE OF RUPTURED ECTOPIC GESTATION.<sup>1</sup>

BY JOHN W. COE, M.D.,  
OF NEW YORK.

THIS case is reported somewhat in detail, not because of the rarity of the condition, but on account of the difficulty presented in diagnosis:

C. T. C., aged twenty-nine years, married nine years; family history negative; habits excellent.

*Previous History.*—Eight years ago patient was suddenly seized with an attack of pain, general over lower abdomen. This was so severe that a hypodermic of morphine was necessary. A good recovery followed. The patient, at that time, lived in another city and the attending physicians made the probable diagnoses of gravel. Two years later there was a similar but more severe attack, the pain persisting for about two days. This also required morphine. The diagnosis of gravel was again made, some small particles being recovered by the physician. Since that time the patient has been very well. There has never been any evidence of an anemia.

*Menstrual History.*—Patient has always been regular except that preceding the two attacks of gravel there was some slight disturbance of this function. The last regular period before the present sickness began on November 29, 1903. One week later, on December 6, there was a slight flow for one day. At this time the patient felt perfectly well.

*Present Illness.*—Patient was aroused in the middle of the night of December 11 by a pain over the lower abdomen. This disappeared after urination, but was followed by a marked chill of about two minutes' duration. By morning all symptoms had disappeared and the patient decided that she had again passed gravel. No physician was called. She was then around, as usual, until the afternoon of December 18, when she was suddenly seized with a sharp pain over the lower abdomen, not at all localized. This was accompanied by nausea, vomiting and marked weakness.

*Physical Examination and Course of the Disease.*—The patient was first seen about three hours after the onset of the attack. At that time all acute symptoms had subsided. There was no tenderness or rigidity. Temperature and pulse were normal. The case was then considered one of gravel and plenty of water with bicarbonate of soda ordered. The next morning the patient was seen by one of the best known consulting physicians in the city, who agreed with the above diagnosis.

Examination of the urine was as follows: Clear, amber, acid, acidity of 10 c.c. urine = 10.8 c.c. n-10 NaOH (Normal being 2-4 c.c. of n-10 NaOH); Sp. gr., 1.040; albumin absent; glucose absent. Urea, 2.4 per cent., uric acid 0.163 per cent. Microscopically, no casts or crystals were found, but red blood cells were fairly numerous. The patient remained in bed during that day and night and was in excellent condition. The next morning, December 20, while still in bed, she suddenly felt very weak and fainted several times. There was some nausea and a dull, heavy pain was complained of in the right lower abdomen. Urination was accompanied by a sharp pain. At the time of the examination by two physicians a little later there was a decided change in the condition. Pallor was marked and patient could scarcely be roused enough to answer questions. The pulse was feeble, from 115 to 120. On palpation slight tenderness was complained of over right side of abdomen and this could be traced up toward the kidney of that side. Vaginal examination elicited no tenderness or evidence of any hemorrhage. A ruptured pregnancy was thought of but the previous history with the urinary condition and absence of anything by vagina made us think that we were dealing with a calculus somewhere in the urinary tract and that this had ruptured through giving a profuse hemorrhage.

*Blood examination on this day showed:* Red blood cells, 3,100,000; white blood cells, 21,000, Hb., 55 per cent. Differential count, polynuclears 73.0 per cent.; lymphocytes, 14.8 per cent.; large mononuclears 12.0 per cent. There was a moderate polychromatophilia and slight deformity. The patient soon began to improve under slight stimulation. She was seen that afternoon by another consulting physician and operative procedure was advised against.

The afternoon temperature on this first day was 101.8° F., and the pulse 116, with the general condition improving. During the next three days the temperature varied between 102.8° F. in the evening and 101° F. in the morning, the pulse gradually becoming slower and stronger. The patient was then seen by one of the best-known general surgeons in the city. He would not venture a positive diagnosis, but thought the condition either an unusual form of appendicitis or an extra-uterine pregnancy. As the patient was improving and nothing definite could be made out by abdomen or vagina operation was advised against. During the next two weeks the temperature remained irregular, varying between 102.2° F. in the evening and 100° F. in the morning. The general condition and the blood steadily improved. On December 26, Dr. Wm. M. Polk was

<sup>1</sup> Received for publication April 30, 1904.

called in consultation and at once pronounced the case one of ruptured tubal pregnancy. At that time a good-sized mass could be plainly felt on the right side. The patient was kept very quiet and abundant nourishment given preparatory to an operation. The lowest temperature reached during the twenty-four days which elapsed between the apparent rupture of the sac and the day of the operation was 99.4° F. in the morning and 100.2° F. at night, the pulse getting as low as 82.

At the operation on January 10, 1904, a mass the size of a large egg was found in the right broad ligament. In the center of this mass there was a small cavity, the surrounding wall being mostly of clotted blood. The ovary was adherent to this mass. In the pelvis and Douglas cul-de-sac was considerable old blood, evidently from the original rupture. Nothing was found to lead one to think that the two attacks of so-called gravel of previous years were similar to this illness.

Pathological examination by Dr. J. S. Thacher showed placental tissue and clusters of decidual cells around the small cavity in the center of the mass.

The patient's convalescence was uneventful. Certain points in connection with this case seem to deserve particular notice.

The urinary condition of high specific gravity, high acidity and containing red blood cells, especially with the history of previous attacks of gravel, was misleading. It should be added that specimens of urine examined were not obtained by catheter. Early in the attack, before anything could be made out by the vagina the acute anemia was the only finding which should have made us more strongly suspect a ruptured pregnancy. The red cells and hemoglobin were reduced nearly one-half and with this there was, on the day of the rupture, a leucocytosis of 22,000. Two days later there was marked polychromatophilia and variation in the size and shape of the cells with beginning regeneration as evidenced by the presence of normoblasts.

#### SOME INTERESTING OBSTETRIC EXPERIENCE.<sup>1</sup>

BY J. J. GURNEY WILLIAMS, M.D.,  
OF PHILADELPHIA.

In my work among the lower classes I have had the opportunity of seeing quite a number of interesting and difficult labors. I regret that I have not taken the histories in several cases of as much, if not more, interest than those reported in this paper. It must be remembered that three of these women were delivered under the most trying and unhygienic surroundings, without the assistance of trained nurses and amid everything but cleanliness. The woman dirty, the bedding filthy, no clean towels, and hot water procured from a rusty kettle heated over a wood fire. Any of you who have gotten your obstetrical experience in the slum districts will appreciate the difficulties to be overcome.

My reasons for presenting these cases is largely a selfish one—the gain to be acquired by your criticisms and discussion.

*Case I.*—White, aged thirty years, primipara. No history of any previous kidney trouble. I first saw this patient after she had passed her calculated time nine days and was sent for because she believed the membranes had ruptured after some irregular and very weak pains. The history given me was negative up to four weeks previous to my seeing her when her limbs began to swell, with puffiness under the eyes. She passed large quantities of muddy urine with pain and suffered greatly from backache, headache and nervousness.

Patient's skin was dry and waxy, eyes bright and staring, heart weak, rapid, with marked accentuation of second sound, also a loud aortic murmur. The woman started and trembled at the least sound. Feet and ankles were swollen and pitted on pressure, vulva tremendously swollen, so much so that she was compelled to lie with thighs separated. Vaginal examination was difficult on this account; small outlet, os admitted finger to first joint, very rigid and unresisting; vertex presented first position, fetus living. Advised immediate delivery, to which consent was given.

With the assistance of Dr. J. W. Kennedy and a student who administered the anesthetic, manual dilatation was begun. This was found to be a very difficult procedure on account of the rigidity and lack of elasticity of the os. After about twenty minutes it was possible to make a high application of the forceps and traction was started. At this time the student informed us that the radial pulse was absent, her pupils widely dilated and the breathing jerky and hard. She was also sweating profusely. The patient's condition demanded rapid delivery, yet neither Dr. Kennedy nor myself could move the head, the os still being hard, unresisting and thick. I would say here that the strength of arms and shoulders only were used, but the anesthetist was compelled to hold the woman in bed. It was decided on account of the conditions present to incise the os, which was done by scissors, cutting the right side nearly to vaginal junction. Even after this procedure it took all the strength of one accoucheur with pressure above by the other to drag the large head through the cervix. This was accompanied by profuse bleeding and at the same time the forceps began to slip, so that they were taken off and reapplied, and the head quickly delivered.

Following the birth of the head the patient had the most profuse hemorrhage I have ever seen. The hand was quickly introduced into the uterus and placentas delivered, the uterine cavity being immediately packed with sterile gauze. While this was being done the anesthetist was administering strychnine, atropine, and morphine hypodermically; one quart of normal salt solution was given by the bowel and hot bottles were placed

<sup>1</sup> Read before the Northwestern Medical Society of Philadelphia, March 1, 1904.

about patient, whose bed was raised at the foot. She was pulseless, had two pronounced convulsions, and was barely breathing, her condition being such that all present expected her to die. There were faint heart sounds, but no respiratory movement in the ten-pound baby, which was plunged into hot water; artificial respiration and direct mouth to mouth inflation begun; this was followed in fifteen minutes by the first respiratory effort. This baby died on the eleventh day from eclamptic convulsions.

I omitted to state that previous to administering the anesthetic, which was ether, I catheterized the patient and found the urine loaded with albumin.

The subsequent history is briefly as follows: No water passed for twenty-four hours, the catheter bringing away eight ounces of muddy fluid containing albumin. Basham's mixture, one-half-ounce t.i.d. with digitalis, grs. 10, also a saline mixture containing iron. Vomiting was present for twelve hours, but was controlled by hot lime-water. Gauze removed in twenty-four hours, no hemorrhage following. From this time the patient made an uninterrupted recovery, the edema disappeared, urine was free from albumin and bowels moved freely. She was up on the nineteenth day.

I saw this woman ten months after her confinement. She was working hard and looking well and strong. She informed me that she does not have any backache or headache, and does all the cooking and housework without fatigue.

*Remarks on Case I.*—It must be remembered that I did not see this case until after the membranes had ruptured, therefore no time was allowed me for preparatory treatment. Chloroform, under the circumstances, both as to her heart lesion and the lack of experience of the anesthetist, would probably have killed the patient. That I was justified in cutting the cervix, was manifest in that more harm would have resulted had the head been dragged through by forceps; in fact, I believe this was not possible. That the free hemorrhage, normal salt solution and morphine probably saved the woman.

*Case II.*—Past history not obtained, other than that the patient had had seven labors, all hard, two demanding forceps, three babies being born dead. I was called to see this case after she had been in hard labor for thirty-six hours. The student informed me that there had been no progress for fourteen hours. My examination was difficult on account of large varicose veins of vulva and thighs, an extensive laceration of the perineum, which was the cause of the large recto and cystoceles, the bladder during each pain protruding through the vagina. The os was about the size of a quarter, rigid and unresisting; vertex presenting.

As this patient was having strong pains and as she did not want forceps used, I advised morphine sulph. gr.  $\frac{1}{8}$ , atropine gr.  $\frac{1}{100}$  and quinine gr. 30. This was at nine in the morning. At four o'clock patient was considerably weaker, as were also the pains. Ether was administered

and manual dilatation begun. In twenty minutes an effort was made to apply Simpson forceps, but the blades being too short a modified Hodge forceps was substituted. The head was engaged and brought well down and the cervix was dilating nicely when suddenly, from what cause I cannot say, the head slipped from the blades and at once receded, following which an examination showed an arm prolapsed into vagina. With considerable difficulty this was returned, podalic version undertaken and what was taken to be both feet secured. At this time it was found that the arm had again prolapsed. This had been mistaken for a leg, and was again returned. The thigh already in the canal so blocked the cervix that it also was pushed upward and both feet secured. The child, dead, weight  $10\frac{1}{2}$  pounds, was quickly delivered, followed by considerable hemorrhage. Normal salt solution, one quart, by enema; ergot one dram and strychnine, gr.  $\frac{1}{20}$  hypodermically were given. This patient made a speedy recovery, getting up on the twenty-first day.

I feel that should a similar case come under my care that I would undertake to deliver so soon as possible, as it must be remembered that this patient was allowed to increase her exhaustion from 9 A.M. to 4 P.M. There were no signs of fetal life on my first examination, therefore the mother's safety and comfort had only to be considered. Axis traction forceps would possibly have given quicker results, yet no delay was encountered when once the forceps was applied, excepting the slipping of the head from the blades.

*Case III.*—Primipara, aged twenty-seven years, of strong build. Was called after she had been in labor twenty hours. She was up and about the room, having pains at intervals of about thirty minutes, lasting one to two minutes.

*Examination.*—Os dilated to size of a quarter, membranes intact, during a pain a foot could be felt, as could also the umbilical cord; the head was high up in the right flank. Abdomen flat, head felt on right, fetal heart sounds present, but feeble. Membranes were ruptured with finger during a pain. Ether administered and manual dilatation with podalic version performed without much difficulty, the head moving upward when the membranes were ruptured. I want to say here that I attempted external version without success, the head rising each time it was brought to present. The feet were secured and at once the cord prolapsed into the palm of my hand. I was unable to replace it, so quickly delivered by Mauriceau's maneuver. Child living, weight  $8\frac{1}{2}$  pounds.

The most interesting point in regard to this case was the finding of a fibroid about the size of a large lemon on right side of fundus. Whether it was because of this I am unable to say, but the uterus would not contract for several minutes following delivery of placenta, at the same time there was very little hemorrhage. Patient up and about on the sixteenth day.

*Remarks on Case III.*—This patient for five days showed symptoms of septic infection. Tem-



perature 100° to 103° F. Pulse up to 120 and a foul-smelling lochia; coated tongue, headache and chilly sensations. She received quinine gr. 8 daily, with milk punches and strychnine gr. 1-40 t.i.d. There was no perineal tear which could be seen or felt.

*Case IV.*—Primipara, aged thirty years, colored, of slight build. Requested to see this patient by Dr. C. H. Weber, who had been sent for on account of membranes having ruptured several hours previously. He diagnosed an arm presentation. The patient had not had any pain and informed me that she was sure the baby was dead, as heartburn had troubled her for thirty-six hours, also no movement had been felt for this time.

*Examination.*—Spacious vagina, head to left, no fetal heart sounds heard. Membranes ruptured, elbow presenting, head in left flank, uterus high in pelvis. Ether administered, manual dilatation and version attempted, which was very easily accomplished, but, unfortunately, with occiput posterior. I now made a high application with the Simpson forceps and procured good engagement of head. With considerable force the head, also the cervix, were brought to the vulva. I now advised taking forceps off and allowing the woman the opportunity of delivering herself, with the hope that the head would rotate anteriorly. Ether was withdrawn, quinine grs. 10 in capsule to be taken with a cup of very hot strong tea, this to be repeated in one-half hour. I saw this patient again in three hours and found her in much the same condition, with the exception that she was having good, strong pains at intervals of about five minutes. Here I would like to call your attention to a point of interest. I made an examination at 6 P. M. and found the os size of half-dollar, this was during a pain, head in same position, but cervix softer and not so inelastic. In forty minutes from this time, in answer to my question "Could she feel the head progressing?" she answered in the affirmative, the examination showing the head on the perineum. Patient turned on left side and in the next two pains head was born with occiput posterior, which was at once followed by a discharge of foul-smelling gas, without any perineal tear that could be seen or felt. The baby, weighing about nine pounds, was dead. I worked thirty-five minutes over this child without results. This patient never had a temperature over 99° F., nor pulse above 80.

*Remarks on Case IV.*—This was a very interesting case to me, as I was in doubt as to the advisability of not interfering at all, also as to applying forceps. My reasons for applying forceps were as follows: (1) These cases when left alone usually require some aid from our hands to complete delivery; (2) the confidence that I could engage head with forceps and deliver if necessary with slight laceration; (3) that, should spontaneous version occur, I would still have to aid in the delivery, as in premature rupture of the membranes, a faulty position rarely turns to a normal position; (4) the fetus being dead there was less

likelihood of spontaneous version occurring; (5) should there be active pains, even for a short time, I am nearly convinced that a transverse presentation should not be allowed to wait in the hope of spontaneous version taking place.

I would call your attention to the statistics of Merz, as quoted by Williams, of 160 cases of rupture of the uterus. Twenty-six, or 16¼ per cent., resulted from neglected transverse positions. This alone would cause us much anxiety in waiting. Again, in these positions we find the pains are of a tetanic type, which, I believe, is the explanation of rupture in some cases. My reasons for doubting the advisability of not interfering are the following: (1) That the vertex would probably rotate anteriorly better than it could rotate with forceps; (2) that I was almost certain that the baby was dead and, therefore, felt there was less chance of the pelvic floor being injured by the woman's delivering herself; (3) that the patient would have less opportunity of acquiring any septic condition by non-interference; (4) that there was every reason to suppose she would deliver herself, having had no pains previous to my seeing her.

*Case V.*—White, age thirty-one years, of slight build; normal weight about 95 pounds. Patient married twelve years, six weeks following marriage pregnancy was interrupted by jolting of a Broad Street bus, recovery prompt and uneventful. Five years following became pregnant again, accompanied by severe and persistent nausea and vomiting, which was not controlled or lessened by drugs. Exhaustion, loss of weight and prostration, with inability to retain nourishment by mouth or bowl, were deemed sufficient cause for the induction of a therapeutic abortion. Following the introduction of a catheter the patient aborted, but was many weeks in regaining her strength.

Since that time she has been in fairly good health. In January, 1901, she suffered from an impaction of the bowels requiring manual removal under ether. She was in good condition until January, 1902, when she had missed one period three weeks. Nausea and vomiting appeared, the patient being unable to retain anything liquid or solid, even when the stomach was empty; mucus and bile would be ejected and retching was almost continuous. Starvation was tried without success, bowel feeding was likewise a failure, partly on account of a very sensitive and painful rectum and partly because of lack of cooperation of the patient herself, as this had been tried during her former pregnancy without success. Cocaine, camphor, carbolic acid, champagne, iced brandy, black coffee, bromides and morphine all failed, individually and in various combinations, not only to control the vomiting or nausea, but to be retained more than a few minutes. The patient was rapidly prostrated, extremely emaciated and completely exhausted. A consultation was called and a therapeutic abortion advised. This was after I had treated patient for two weeks without success, a further consultation was called



and waiting four days, with starvation and applications of silver nitrate, solid stick, to cervix was advised. This was tried without the slightest benefit, the woman becoming weaker and complaining of intense headache.

At this time, three weeks after vomiting first appeared and six weeks following conception, it was decided by all that a therapeutic abortion was necessary to save the patient. Against my opinion a No. 7 silk catheter was introduced with considerable difficulty. At the end of six hours it slipped from the uterine cavity and was again introduced, accompanied by slight bleeding. In twenty-four hours, there being no signs of uterine contraction, it was removed and a dilation and curettement advised. This I did on the following day, dilating one inch, the finger and curette bringing away about three drams of membrane and fetal structure. Douching of uterine cavity followed by iodine and a light gauze drain to fundus and later by a copious rectal injection of normal salt solution. Gauze was removed in twenty-four hours. Nausea and vomiting ceased the following day, patient was able to retain liquid nourishment and slept well. From this time she made a very satisfactory but slow recovery.

*Case VI.*—For the following notes I am indebted to Dr. J. C. Gittings, who asked me to see this case with him. White, age thirty years. Father died of paresis. Mother and sister well. No serious illness in the past. Engaged to be married six years. Not altogether happy, had been nervous and subject to crying spells of late. Married in October, 1902, and dreaded the idea of pregnancy. (My first question to the husband was "Does your wife want a baby?" He told me she was almost as anxious to have an heir as was he.) Last menstruation June 6, 1903. Early in August first noticed nausea, and vomiting began on August 10. In bed continuously from that date. No food of any description retained, ingluvin, cocaine, bismuth, chloral, chloretone, bromides and opium tried without success. In ten days vomiting ceased, but was succeeded by intense retching. Two days following mild delirium was noticed, pulse 100, wiry, took a very little nourishment, retching persistent. Constant retching all night; much weaker; pulse 140, temperature 101° F.

I saw the patient at this time and found her moaning and tossing, cheeks flushed, eyes staring, pulse about 150, temperature 102° F. She did not recognize anyone, was greatly emaciated and when roused would complain of pain wherever she was touched. Retching was present, with ejection of bile-stained mucus, her breath had an intensely acid odor. Pelvic examination showed a pregnancy of about ten weeks' duration; uterus in front, freely movable, os closed. Therapeutic abortion was advised. This I did without an anesthetic, but the pain caused by this procedure compelled me to stop after breaking up the membranes, and introducing a gauze drain. I felt that should uterine pains take place the woman would empty the uterus. Dr. Gittings called me in forty-

eight hours, as there had been no uterine pain, but the retching had subsided, patient taking some nourishment, mental confusion and delirium unimproved. I advised emptying uterus under ether. This was done at 9 P.M., patient standing operation well. The whole uterine cavity was carefully explored with the finger and all substance removed, followed by a normal salt solution douche to fundus, and a light gauze drain. Temperature following operation, 99° F.; pulse 130.

*Further Notes By Dr. Gittings.*—Patient stronger, dementia more active, sleeps very little, takes some nourishment; recognizes her family. Three days following operation Dr. Burr diagnosed acute dementia, patient takes nourishment only at times, sleeps fairly well, temperature 98° F., pulse 114; mind more clouded, talks constantly except when asleep, articulation mumbling and indistinct. Uterine condition negative. Eleuterium and magnesia produced free catharsis. On the eleventh day some abdominal distention noticed, constant moaning, temperature 101° F., pulse 120. In forty-eight hours from this time the patient died. Autopsy made twelve hours after death revealed marked distention of large and small intestine and stomach. Post-mortem changes advanced. Intensely foul intestinal contents, spleen friable but not enlarged, moderate parenchymatous nephritis. Uterus slightly subinvolved but mucosa clean, no septic foci, adnexa normal. Diagnosis of death, auto-intoxication.

Dr. Gittings tells me he took charge of this case on August 24, after the patient had been ill twenty-two days.

On looking back over these few cases I have no doubt that there is much to criticize. The real points of interest and of practical value are, By what treatment or procedures, other than those used, could I have obtained better results? Cases like these are continually confronting us, and we are called in late when labor has progressed beyond the time for prophylactic measures and we are compelled to do the best that can be done at this time. Personally I have been literally thrown upon the labors occurring among the lower classes, where there is little choice as to refinement in technic—all procedures being confronted with bad-smelling, filthy and almost unlivable surroundings. I grant that this has little to do with the proper procedures which should be carried out, and it is with the wish of being criticized that I present the cases to you this evening.

**Vaccine Virus in Massachusetts.**—An inspection of the State's new plant for the manufacture of vaccine virus was among the events of the current quarterly meeting of the Massachusetts Association of Local Boards of Health. A forenoon was spent by many of the members at this model plant at the Bussey Institution, Forest Hills. At the new brick building, which was constructed by Harvard University and leased to the State, the work of preparing vaccine and antitoxin is carried on under the most careful supervision and with the best of modern facilities.

# CHRONIC MASTITIS AND DIFFUSE FIBRO-ADENOMA OF THE BREAST.<sup>1</sup>

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ENCAPSULATED or localized fibro-adenomata of the breast are not uncommon, usually occurring in early life, forming small, movable, slowly growing tumors which are easily cured by extirpation. They appear to have little or no tendency to malignant changes.

A chronic induration of the breast with some enlargement, in whole or in part, is very commonly observed in women in middle life. It is sometimes seen early, even in the third decade, but rarely begins after the menopause, although it may then persist if already present.

We can recognize two pathological varieties in these changes: (1) chronic interstitial mastitis, and (2), diffuse fibro-adenoma. The typical cases of each are easily distinguishable, but the two conditions may appear in different parts of the same breast, and in some cases it may be impossible to determine whether the process found is an inflammation or a new growth. Both may closely simulate carcinoma in their clinical and physical characteristics, so that a diagnosis may be difficult. Both of them also seem to be very liable to carcinomatous degeneration, or to be followed by the development of carcinoma. Inasmuch as only a careful microscopical examination can distinguish between breasts affected by these two changes, the diagnosis between them before removal is impossible. Nor is it very important, the main necessity being to determine that actual changes sufficient to require radical treatment have taken place.

The clinical picture is as follows: In a woman in middle life (whether single or married, childless or multiparous, appears to be of no consequence) an induration takes place in one or both breasts, involving the entire gland, or forming a distinct nodule in one portion. We rarely find the rest of the breast perfectly soft and healthy, even if the superficial examination reveals only one definite nodule. It is seldom that the patient has suffered from any injury or abscess formation which might be considered a cause of the changes. When the process is localized or limited to one lobe, a more or less distinct mass is felt, moderately hard, not freely movable in the breast, but rarely attached to the skin or deep fascia. If a cyst of any size be present the mass is usually elastic, but it is often hard and sometimes of stony hardness like carcinoma. Fluctuation can

seldom be demonstrated, the tension and fluid pressure within the walls of the cyst being so great. Small cysts feel like shot or beans embedded in the tissues of the breast; and the larger ones, surrounded as they often are by thick indurated walls, may exactly resemble a small carcinomatous nodule. Usually a nodular or granular induration can be felt in the rest of the breast by careful examination (pressing the gland gently against the chest while palpating with the fingers, especially at the margins), even when the patient complains only of the more evident portion or prominent tumor.

When the disease has advanced equally in all parts of the breast the entire organ feels indurated, uneven on its surface, and when grasped between the fingers gives the impression of being made up of numerous nodules. In a certain number of cases there may be some adhesion of the skin and even retraction of the nipple, in spite of the denial of Bryant and other authorities that adhesion of the skin and retraction of the nipple are ever felt except when carcinoma is present. A retraction of the nipple which is evident before operation occasionally disappears in the breast after removal, probably because of the loosening of the fibrous stroma which had drawn upon the nipple. The axillary glands are sometimes enlarged from inflammatory reaction, and they may be tender to pressure; but they are not so hard as is sometimes the case in carcinoma. As illustrating adhesion of the skin and retraction of the nipple we quote two cases from several which we have seen.

*Case I.*—M. B., widow; seventy-one years of age. Had noticed a lump in the breast eight months previously. No history of injury, etc. In the internal half of the breast was a smooth cyst the size of a walnut, movable in the tissues. A second mass lay near the nipple which was retracted, and the skin was slightly adherent over this mass. Very little induration was present in the breast. The breast, axillary contents, and pectoral fascia were removed at St. Luke's Hospital, October 10, 1899, and the patient has remained well since then. The microscopical examination showed a typical diffuse fibro-adenoma with cysts.

*Case II.*—M. W. P., sixty-five years old. Her mother had cancer of the breast. Patient has never been strong; she has borne one child. Three years ago she noticed a small swelling in the right breast the size of a hickory nut, which has been growing slowly until three months ago, when it began to grow more rapidly. Moderate pain in the breast. Patient has lost flesh and strength during the past year. In the superior external quadrant of the right breast is an irregular, hard, insensitive mass with nodular surface, the size of a hen's egg. It is movable on the deeper parts, but the skin is adherent and the nipple retracted. No glands can be felt in the axilla and the arm is not swollen. The tumor was supposed to be carcinoma, and on September 11, 1902, at St. Luke's Hospital, the breast, the subjacent sternal part of

<sup>1</sup> This paper was read before the Medical Society of the State of New York, at its meeting in New York, October, 1901, but was not published because it was thought wise to accumulate further clinical evidence of the views presented. This has been obtained and the paper is published with no important changes in the text.

<sup>2</sup> Received for publication, April 5, 1904.

the pectoralis major muscle and the axillary contents were removed. After removal the mass was found to measure eight cms. in diameter and to be one and one-half cms. thick, and enlarged glands were found in the axillary fat.

**Microscopic Examination.**—Fibrous tissue very abundant. Few acini are present and these are cystic in places. The lymph-nodes show chronic inflammatory changes. The tumor is a fibro-adenoma.

Cysts which lie very near the surface may stretch the skin, and the dark color so often present in their contents shows as a blue or purple discoloration. I have seen largely dilated veins on the surface of the breast of some cases (and in one case in the axilla) without any perceptible cause for the dilatation.

The patient is as a rule unaware of the changes which are taking place in the breast, unless a prominent single nodule or cyst has developed, for the process is often painless. In some cases, however, there may be discomfort or actual neuralgic pain. A fear of cancer is generally the cause for seeking medical advice, not the actual suffering caused by the tumor.

We have seen a subacute or even an acute infection added to the existing disease, and then there may be a discharge of pus from the nipple, or one of the cysts may suppurate, with the usual symptoms of acute mastitis. Abscess, however, is a rare complication, and the infected cyst generally discharges through the nipple or the infection is overcome by the tissues; resolution and absorption occur, and the cyst returns to its original size or even disappears.

The progress is very slow, often running for years with little change, and the outcome is a matter of dispute. Sometimes cysts of considerable size will spontaneously disappear by absorption of their contents. In only one case have we had the courage to delay operation for this result.

**Case III.**—M. R., single, had a rather large cystic fibro-adenoma of the left breast, and we removed the breast and axillary contents at St. Luke's Hospital, October 29, 1896. That side remained well, but she returned in June, 1900, with a tumor the size of a small hen's egg at the axillary border of the right breast, round, firm, not adherent. The rest of the breast appeared to be normal except for a very slight induration between the tumor and the nipple. In view of the perfectly limited area involved, the absence of all indications of malignancy, the evidence we had of the nature of the tumor in the other breast, and the opposition of the patient to further operation unless absolutely necessary, she was allowed to wait, being told to report later. In February, 1901, she wrote, "I find the bunch in my breast has nearly disappeared." In spite of the apparently favorable outcome, we confess that we do not even yet feel at ease as to the final result in this case.

Sometimes the whole fibrous and cystic mass undergoes atrophy, but the absorption may be

much delayed, just as a fibromyomatous uterus is late in yielding to senile changes. Such cases explain some of the instances of "disappearing tumors" and of spontaneous recovery from supposed cancer. More usually the progress is continuous; and of interest in this connection is the case of M. R., widow, thirty-nine years of age, native of Ireland, who has twice in the last three years had cysts removed from the left breast. The tissues of this breast felt hard and several small nodules could be felt. One year before admission she had noticed a lump in the right breast the size of a hazel nut, which had grown at first slowly, then rapidly, to its present size, about one and one-half inches in diameter. The mass is rounded, freely movable, and the skin not adherent. Small nodules can be felt in the mass. Both nipples are normal. On September 29, 1900, the right breast and axillary contents were removed at St. Luke's Hospital, and the microscopical report was fibro-adenoma with cysts. It is quite probable that the changes in the left side will require (or have already made necessary) a similar operation.

#### PROGNOSIS.

In estimating the prognosis we must distinguish between the extensive and the limited cases, and also between cases with very advanced changes and those with slight alteration. In the writer's experience the grade of development is more important than its extent. The advanced cases are marked by great induration, sometimes with edges which are quite sharply defined like those of a carcinomatous tumor. A number of cysts may also be present. In such cases we believe the danger of malignant change is great, whether the whole breast is involved or only a part of the gland. When, however, the induration is slight only one or two small cysts being found, and especially if only a part of the breast is involved, there appears to be more chance of resolution and atrophy taking place. The induration varies from a slight thickening of the mammary tissues to a hardness almost equal to that of carcinoma, and constitutes the most reliable sign of the grade of pathological change and of the consequent danger.

Of a considerable number of cases illustrating the relations between these conditions, chronic mastitis and diffuse fibro-adenoma and carcinoma we present the following as of value.

#### CARCINOMA WITH MASTITIS OR ADENOMA.

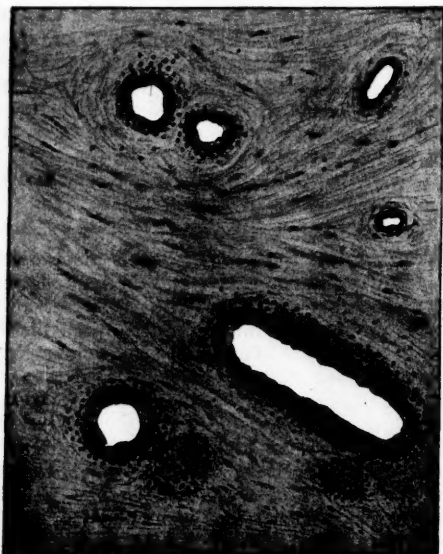
The first case was reported by me in the *Medical Record*, June 2, 1888, and the patient's history is so interesting that I repeat it here. Dr. C. N. Dowd showed a sketch of this tumor in a paper on fibrous tumors of the breast in the *Medical Record*, April 16, 1892.

**Case IV.**—A. W., thirty-nine years of age, English, entered the New York Cancer Hospital. She had been married for eighteen years, had had one child and five miscarriages since, the last one ten years ago. No history of abscess or of injury of the breast. She first noticed the lump



four months before admission, when her attention was attracted to it by a dull, aching pain. It was the size of a bean and grew slowly. For two months she had had pain in the breast and in the arm. The tumor was situated in the upper and outer quadrant of the left breast and consisted of several nodules very sensitive to pressure. There was no retraction of the nipple and no discharge. The most prominent part of the tumor was elastic but without fluctuation. The axillary glands were enlarged but not perceptibly. The other breast felt slightly indurated but there was no distinct tumor in it.

Fig. 1.



Atrophic form with only a small amount of gland tissue and a good deal of round-cell infiltration about the alveoli.—Case M. B.

On March 10, 1888, the breast was removed, also the axillary contents with enlarged glands. Dr. G. C. Freeborn, pathologist to the hospital, reported that the entire breast was composed of dense white tissue, with several cysts from a quarter to one inch in diameter. Microscopically the changes were those of chronic mastitis, but in the neighborhood of the largest cyst was found a nodule of tissue with large granular cells arranged in narrow alveoli and surrounded by a stroma of connective tissue. The lymph-nodes exhibited simple hypertrophy. This patient disappeared until June 19, 1901, when she returned with advanced cancer upon the opposite side. She had had good health in the interval, and the left side was free from tumors, with a healthy scar. At her urgent request the tumor was very thoroughly removed at the General Memorial Hospital, and, as we had expected, by the following March a hopeless recurrence took place in the thorax.

Case V.—B. N., thirty-six years old, admitted

to St. Luke's Hospital, June 4, 1902; native of United States; married but never pregnant. She had accidentally discovered a lump in the breast two weeks before. In the right breast were seven distinct nodules, the two largest lying just below and just above the nipple. The latter was not retracted, but it dimpled when the upper of these two growths was drawn away. The masses were irregular in shape, firm, moving on the deeper parts, and the skin was movable over them. Some portions were harder than others, giving the impression of hard nodules in infiltrated breast tissue. The axillary glands were slightly enlarged and hard.

Fig. 2.



Adenomatous type with the production of secondary cysts. There is a moderate amount of inflammatory infiltration.—Case A. H.

The breast, axillary contents, and entire pectoralis major muscle were removed, a frozen section having demonstrated the dangerous nature of the growth, which we had previously considered benign. After removal the nodule above the nipple measured six by five by four centimeters. It was not attached to the skin or deeper parts. Microscopically it contained irregularly arranged alveoli of large oval cells with a fibrous connective tissue stroma. In the same sections were seen adenomatous acini of normal gland tissue and also some which still showed a lumen but had many layers of cells on a membrana propria. The rest of the breast showed adenomatous changes with considerable round cell infiltration around the acini. The lymph-nodes also showed carcinomatous involvement of the same type as the nodule in the breast. The patient continues well (1904), although the glands removed from the infraclavicular triangle were involved, but there is edema of the arm and hand.

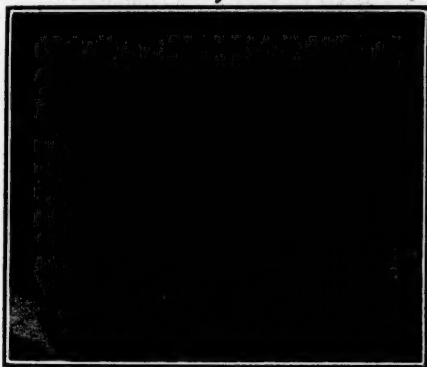
Case VI.—H. M., widow; native of United States, sixty years of age, referred to us by Dr. A. A. Smith, was operated on at her house, October 10, 1902, for a tumor in the right breast, the size of an English walnut, freely movable,

with no adhesion of the skin or retraction of the nipple, and no glands perceptible in the axilla. Examination of the tumor showed a minute nodule of gelatinous carcinoma measuring about twelve millimeters in diameter. The carcinoma was practically limited to this area and could not be found in other portions of the breast, which contained only fibroadenoma. The lymph-nodes were slightly inflamed but contained no metastases. The patient died of apoplexy without known cause, shortly after the operation.

#### CARCINOMA FOUND ONLY IN LYMPH-NODES.

*Case VII.*—M. S. R., forty-eight years old; born in United States, married; admitted to the General Memorial Hospital, April 27, 1899. The breast was large, full of hard nodular masses, not adherent. It was removed with the axillary contents and subcutaneous pectoralis major muscle. Involved glands were found beneath the clavicle. Microscopical examination showed only fibroadenoma in the breast, while carcinoma was present

Fig. 3.



Highly magnified portion of Fig. 2, to show the formation of secondary cysts in the epithelial masses and also the inflammatory infiltration of adjacent connective tissue.

in the glands. This patient was seen again in September, 1900, with recurrence in the skin about the scar, and with typical central carcinoma of the other breast and involved lymph-nodes on that side.

A similar case, referred to me by Dr. C. E. Quimby, was operated upon at the patient's home, July 25, 1895. No sign of carcinoma could be found in the breast, but the glands were extensively diseased. This patient was alive and well three years after the operation.

#### WITH CARCINOMA OF OTHER SIDE.

*Case VIII.*—A. H., fifty-five years of age, married; born in United States; admitted to St. Luke's Hospital, September 9, 1902. Her sister and aunt died of cancer of the breast. Menopause one year before. Had never been pregnant. Had right breast removed five years before for cancer and no further trouble until two months ago, when a mass appeared in right arm-

pit. She had never noticed anything wrong with the left breast and was surprised when shown the tumors there. There was a mass near the scar on the right side, another in the right axilla, and a nodule infiltrating the skin over the right scapula. At the urgent request of the patient these were removed and subsequently when an anesthetic was administered to graft the large area left by the previous operation the left breast was removed also. On the left side the mass was in the internal inferior quadrant of the breast, irregular in shape, very hard and slightly tender on pressure, movable on the deep parts, but the skin over it adherent and the nipple markedly retracted. No glands could be detected in the axilla. The diagnosis of carcinoma was made before operation, but the microscope revealed only fibroadenoma in the breast, and slight inflammatory changes in the solitary lymph-node which was found enlarged in the axilla.

#### CARCINOMA APPARENTLY PRECEDED BY MASTITIS OR FIBRO-ADENOMA.

*Case IX.*—M. J., fifty-two years of age, born in Ireland; married; admitted to General Memorial Hospital, February 3, 1899. She had had for two years a mass in the left breast with occasional attacks of pain, especially at the menstrual period. The mass had increased slowly and was found to be the size of a hen's egg, situated in the lower external quadrant. It was not very hard and was freely movable without attachment to the skin or fascia. The nipples of both breasts were somewhat retracted. Both glands were large and the patient was fleshy. No lymph-nodes were felt in the axilla. The long duration of the tumor and the thickened condition of both breasts made the tumor seem benign, but on removal the microscope demonstrated carcinoma just beginning in a breast the seat of chronic mastitis. The lymph-nodes were normal.

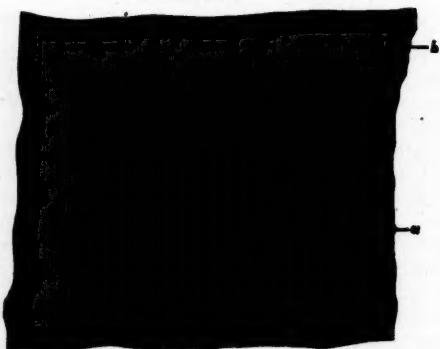
*Case X.*—M. M., sixty-two years of age; married; native of United States; admitted to the General Memorial Hospital, February 1, 1900; had had an enlargement of the left breast for five years. Examination revealed a tumor in the upper half of the breast, slightly adherent to the skin and pectoral fascia, and some palpable glands in the axilla. After removal the microscope showed adenocarcinoma, not involving the lymph-nodes, apparently secondary to a chronic mastitis.

*Case XI.*—F. A. G., single, fifty years of age; native of United States; admitted to the General Memorial Hospital, May 4, 1899. Two years previously, after an attack of diphtheria, she had an "ulcer" on the right breast, which remained open for two months. Eight months ago she found a lump, the size of an English walnut, in the same breast just below the nipple, not attached to it. The tumor has now grown three times as large, increasing especially in the last six weeks, and is harder. It is in the center of the breast, the greater part lying internal to the nipple, as large as a small orange, somewhat flattened. The skin is movable over the mass, but

the nipple seems attached and is very slightly retracted. Glands can be felt in the axilla, although the patient is very stout. Adenocarcinoma was found in the breast and also a cyst holding an ounce of bloody serum. The glands were involved. Her physician, Dr. E. J. Thompson, of Hartford, informs me that she "enjoyed good health for two and a half years and then a secondary tumor developed in the crest of the left ileum. Intestinal obstruction caused death without any local recurrence."

**Diagnosis.**—The diagnosis of these conditions from every lesion except early carcinoma is generally easy, and the purpose of this paper is to show that it is not important to make the distinction between them and carcinoma because they are so frequently followed by the development of cancer that they can be considered practically preliminary stages of that dangerous neoplasm.

Fig. 4.



Drawing to show the combination of the inflammatory and adenomatous types in chronic mastitis.—Case M. R.

The simple congestive thickenings of separate lobes of the breast not infrequently seen during menstruation or associated with inflammatory lesions of the other genital organs, are not so hard to the touch, less distinct in outline, and much more painful to pressure. They are also intermittent and occur in younger individuals.

Retention cysts occasionally found in the breasts are distinguished by their thinner walls, and by the healthy consistency of the remainder of the organ.

The encapsulated fibro-adenomatous tumors, and the intracanalicular fibromata have their own features, such as free mobility, appearance earlier in life and usually occurrence singly in a breast otherwise healthy. The intracanalicular form may have a bloody or serous discharge from the nipple. Cysts may occur with this form, although they are not common. Sometimes the intracanalicular form occurs in breasts which also show the diffuse fibro-adenomatous changes.

The recognition of encapsulated abscesses may present almost insuperable difficulties and may mislead the most careful and experienced surgeon. On this account some authorities urge an

exploratory incision in every case of tumor of the breast before removing the organ.

The signs upon which the diagnosis of malignant disease of the breast is to be made are given in the books as follows: Stony hardness of the tumor; its adhesion to the skin or fascia; retraction of the nipple; enlargement of the lymphatic glands; "pig-skin," or "orange-peel" dimpling of the skin; fixation of the breast; ulceration; metastasis and cachexia. But all except the first four signs are so late in development that their appearance indicates that radical cure by operation is impossible.

Enlargement of the lymphatic glands is also a comparatively late symptom; and in some cases it comes so late that to delay operation until its appearance would preclude all chance of a cure. It may also be a very early condition. Again, the lymph-nodes may be invaded by the new growth and yet not be sufficiently large to be palpable. The same uncertainty exists as to the date of appearance of retraction of the nipple and adhesion of the skin, both of them sometimes preceding and sometimes following the lymphatic infection.

The following cases are of interest, as showing how one may be misled by the absence of the usual symptoms of malignancy.

**Case XII.**—N. M., thirty-seven years of age; married; six children; native of Ireland. Patient had nursed her children and had never had an abscess of the breast. The last child was born fifteen months and weaned only one month before admission. On admission she was four months pregnant. Five months before she had a pain in the right breast and axilla, and soon after found a tumor which she thinks was as large then as now. In the right breast, below, and external to the nipple, was a hard mass the size of an English walnut, freely movable on the deeper parts, and the skin freely movable over it. The nipple was not retracted. A hard gland, the size of an almond, was felt in the axilla. The breast and pectoralis major were removed, with thorough removal of the glands in axilla and under clavicle, at St. Luke's Hospital, August 22, 1899. The following June she was well and had had her child in December. Microscopical examination proved the growth to be carcinoma.

**Case XIII.**—I. T., single; native of United States; thirty-seven years old. Family history negative. Eight months before admission she had noticed a small, movable lump in the right breast which had grown steadily. Three or four months ago she noticed axillary glands. No pain. A hard, irregular mass about two by three inches was felt in upper outer quadrant of the right breast; nodular on the surface. The skin was adherent; but the mass was not adherent to the fascia; and the nipple was not retracted. Cloudy serum exuded from the nipple on pressure. Several glands could be felt in the axilla. The tumor was removed with breast, pectoral muscle, a very extensive area of skin, and the lymph-nodes, at St. Luke's Hospital, January 19, 1903. The patient (Jan., 1904) is free from local recurrence,



but has paralysis just beginning with signs of tumor in the dorsal spine and an enlarged liver.

*Case XIV.*—S. P., forty-seven years old; married; native of the United States; admitted to the General Memorial Hospital with a tumor of the left breast near the nipple. The tumor in the lower half of the breast was a tense ovoid, smooth, fluctuating mass, four inches in diameter, not adherent to the fascia and but slightly to the skin. The nipple was retracted, but this was supposed to be due to the tension of the cyst close to it and the tumor was considered benign. It was of ten months' growth. The cyst was found to contain dark-brown fluid and the walls were not very hard. On October 16, 1899, the breast was removed and the axilla exposed by incision, but no enlarged nodes could be felt, therefore no dissection was made. The tumor proved to contain carcinoma. On June 16, 1900, the patient having returned to the hospital with an axillary mass the size of an English walnut, which she first noticed three months previously, the axillary contents were thoroughly removed and found to contain cystic carcinoma exactly like the tumor in the breast.

*Case XV.*—M. R., thirty-two years old; native of the United States; married; admitted to St. Luke's Hospital, September 4, 1903. She had had seven children, the last born nine months previously and not nursed. Three months before she had accidentally noticed a hard lump in the right breast the size of a marble, which had gradually increased in size and had recently caused pain. One month before admission she had noticed a lump in the right axilla which had enlarged and grown tender. The right breast was pendulous and large, and contained a tense, fluctuating, smooth-walled mass, globular in shape and about two inches in diameter. Near the anterior wall of the axilla was a small mass resembling an enlarged lymph node. The rest of the breast felt healthy. The tumor was not tender to pressure; not attached to the deeper parts or to the skin, and the nipple was not retracted. An exploratory incision opened the cyst and discharged about three ounces of slightly cloudy, yellow serum. After evacuation no induration could be felt even with one finger in the cyst and counterpressure outside, the tissues feeling perfectly soft and normal. The interior of the cyst seemed perfectly smooth. A small fragment of the cyst wall was removed for microscopical examination and showed carcinoma. On September 19, the breast and sternal part of the greater pectoral muscle were removed and primary union obtained. Examination of the specimen showed no new growth anywhere in the breast except in the wall of the cyst, which was formed of epithelial cells in a carcinomatous arrangement with little stroma. The axillary fat contained a mass of carcinoma, which gave no sign of having originated in the lymph-node, measuring  $3 \times 2\frac{1}{2} \times 2\frac{1}{2}$  cm. Only one node was found and this was not involved.

Many cases of diffuse fibro-adenoma and of

chronic mastitis with cyst formation present small densely hard tumors, and it is clear that up to the present there is no absolutely reliable sign to distinguish between these conditions and carcinoma before one of the other cardinal signs of malignancy, such as adhesion of the skin, retraction of the nipple, or involvement of the lymphatics, makes its appearance. We all know too well the danger of allowing a malignant tumor to remain even a week after its discovery, especially when we consider that the tumor has already attained some bulk and must have been growing for weeks or months before it was detected. It is therefore impossible for the surgeon to wait for the development of these reliable signs and action must be taken at once.

On the other hand, the masses in the breast produced by chronic mastitis and diffuse fibro-adenoma in certain cases present some adhesion of the skin to the surface of the tumor and some retraction of the nipple, so that the simulation of malignant disease may be complete. We must therefore conclude that errors are possible in both directions. Add to this the fact that malignant changes are quite frequent in these indurated breasts, as can be demonstrated by careful microscopical search, while the patch in which the change begins may be so small that it cannot be recognized except by the microscope and may escape careful search by the pathologist, even when he knows that it must be present because he has already found carcinomatous changes in the lymphatic glands.

There is only one legitimate decision for the surgeon to reach in such conditions; namely, that a breast which presents changes so closely simulating the clinical picture of cancer, and possibly containing a small area of carcinomatous change, must be treated like a breast in which an early carcinoma has been demonstrated. The diagnosis between these conditions, and the question as to the probable resolution of these inflammatory changes, or the length of time before carcinoma will develop, are all interesting scientifically; but to test them by awaiting development is playing with human life. The individual patient cannot afford to make that scientific experiment.

*Treatment.*—The knowledge of these facts must determine our choice of treatment. We can separate these cases into three classes: (1) Moderate induration, limited or general; (2) marked induration, limited to one-quarter of the breast or less; (3) marked induration, general.

*First Class.*—We need not remove every breast which has a small mass of moderate hardness, or in which the tissues of the entire breast are slightly indurated. A slight induration is very common in women from forty to fifty years of age. These are cases which can be left for time to produce atrophy, the patient meanwhile being kept under regular observation. Nor should we excise every cyst which is of small size, thin-walled and soft, in a normal breast. The cysts can be treated, it is said, by aspiration and pressure, but in my personal experience this method has failed. When-

ever there is indurated tissue in the neighborhood of the cyst or elsewhere in the breast, the accumulation of fluid can be set aside as an unimportant feature of the general disease of the breast tissue. The induration is the real disease, and the case should be treated according to the indications to be discussed below. The determining factor in the treatment of these cases is the degree and the extent of the pathological change as shown by the accompanying induration.

**Second Class.**—When a small mass is found in the breast showing the characteristic nodular induration, its removal should be urged. Consent should be obtained beforehand for the removal of the entire mamma if the surgeon thinks there is a possibility of discovering positive evidence of malignancy during the operation, or the patient should be made to understand that the operation is preliminary to a careful microscopical examination of the tumor, and that an immediate radical operation may be required if the character of the tumor should be proved by this examination to be dangerous. Banks asserts that the gross appearance of the tumor after section by the surgeon is more reliable than a microscopical examination, but few will agree with him. The writer has frequently made guesses founded upon these appearances and has been wrong as often as right, so that he is unwilling to express an opinion without the assistance of a frozen section which can be made at once before the wound is closed. At the same time it must be remembered that frozen sections are not absolutely reliable and more than once sections have been obtained in our cases from cysto-adenoma and even from a typical encapsulated fibro-adenoma which closely resembled in appearance malignant disease. The thickness of the sections and the indifferent staining account for this uncertainty. This removal of limited masses of the breast must be restricted to tumors involving less than one quadrant of the gland, for if more than this be removed the portion left behind is of no cosmetic or even sentimental advantage to the patient. Some surgeons go so far as to advise the saving of the nipple even when the removal of the entire gland is necessary in non-malignant disease; but the writer's patients appear to be entirely indifferent as to the leaving of some small fragment of the breast,—in fact, most of them have themselves urged the removal of the entire organ as soon as it was made clear to them that a considerable portion must be taken away. Having the nipple does not add to the esthetic appearance and it is dangerous to leave any epithelial structures.

**Third Class.**—If the induration involves so much of the breast as to leave less than three-quarters of the gland after excision of the diseased portion with a sufficient zone (half an inch to one inch wide) of the surrounding healthy tissues, the entire breast should be removed and the pectoral fascia dissected off with it and the axillary contents removed as well. These latter precautions the writer believes to be wise, for they do not add perceptibly to the risk of the

operation when properly performed, and in more than one case, as already mentioned, carcinomatous changes have been found in the glands when none could be discovered in the breast.

While we can lay down these general rules, every case should be carefully studied before deciding upon the method of treatment. Many women particularly dread the terrible malady of cancer and are rendered so nervous by the knowledge that anything exists in the breast in the shape of a tumor, that removal of the organ is the only sure method of restoring their happiness; and we cannot even conscientiously advise waiting, because if the breast already shows pathological changes, no surgeon can honestly assure the patient that carcinoma has not begun. As we remove the suspicious appendix, so should we remove the suspicious breast, even if we feel tolerably certain that dangerous changes have not yet taken place in the suspected organ. The patient has a right to demand this action as a method of life insurance.

#### THE PATHOLOGICAL ANATOMY OF TUMORS.

BY F. C. WOOD.

THE name of "maladie cystique" was given by Reclus to a peculiar chronic condition of the breast, and he also pointed out the fact that the tumors are usually bilateral and closely related to the presence in the breast of a considerable amount of chronic inflammation with the production of dense fibrous tissue. The question was still further investigated by a number of French surgeons, chief among them being Delbet. At first Reclus and others claimed that the development of carcinoma generally followed these changes. The present trend of feeling among this group of observers is that the disease is not progressive, but is self-limited, and that the cysts disappear by absorption of their contents while the glandular areas atrophy. They do not consider that carcinomatous changes are as likely to occur as was once supposed.

In the year 1890, Schimmelbusch collected and described a series of cases of what he called cystadenoma of the breast, and pointed out that carcinomatous changes were to be found in a certain proportion of breasts thus affected. His description has given rise to much discussion as to the exact interpretation of the anatomical findings in these cases, and this discussion has brought to light the fact that there are a number of conditions in the female mamma which are closely related to the change described by Schimmelbusch, and yet possess a distinctly inflammatory character which has been especially emphasized by König.

The growth described by Schimmelbusch forms a tumor arising in the breasts of married or unmarried women, chiefly those who have had no children, and consists of a fibrous tissue growth containing numerous cysts with thick gelatinous contents. The formation of the cysts is antedated by an abundant growth of the epithelium of the acini of the breast tissue, which often fills the

entire lumen of the acinus. This epithelium then degenerates, and the cavity remaining fills with the debris of the cells and with the secretion of the remaining healthy cells. (Fig. 4, a.) The connective tissue does not show any marked inflammatory change and the tumor does not become adherent to the surrounding tissues and it is almost always bilateral. In most cases there is an increase of the interstitial connective tissue, with no definite capsule or boundary to the growth, so that the name diffuse fibroadenoma appears appropriate. In some cases there is an abundant round cell infiltration of the connective tissue, and the adenomatous growth is less marked although cysts are frequent. For these cases we may use the term chronic interstitial mastitis. (Fig. 1.) But there is no sharp distinction to be drawn between the two and one is often in doubt in which group to place certain intermediate varieties of tumor.

The anatomical changes found in these cases may be designated as chronic mastitis or diffuse fibro-adenoma, and are extremely variable, depending upon whether the glandular substance or the connective tissue is the most affected.

The lesions differ distinctly from those found in simple adenoma of the breast and in the special forms of fibroadenoma known as intracanalicular and pericanalicular fibroma, which rarely become carcinomatous and are of interest to the surgeon chiefly because of the physical discomfort which they cause. The breasts show in these cases either a simple increase in the amount of glandular and connective tissue sufficient to form a tumor or a marked increase in the periglandular connective tissue, often accompanied by diffuse mucous degeneration. The masses so formed are as a rule sharply delimited from the remainder of the breast tissue.

The changes which characterize the conditions known as interstitial chronic mastitis or diffuse fibroadenoma are of very different character. The breast may be largely filled by the growth which may contain harder or softer areas, the latter being the cystic portions, or as is more frequently the case there may be many large and small hard nodules scattered through the gland, connected by bands of connective tissue, or the tumor may be confined to a single irregular and ill-defined mass which is but slightly movable. Rarely, however, are there symmetrical oval tumors which are freely movable in the breast substance. These cases are the ones which show the adenomatous type in distinction to the chronic inflammatory. The nipple is occasionally retracted.

Three general types of growths may be observed:

1. Tumors in which the breast has recently been the seat of a subacute inflammation entering the lacteal ducts and involving the periglandular connective tissue. The process is not the same as is seen in acute puerperal mastitis with the formation of abscesses. In chronic mastitis abscesses are rarely developed as the pus, if formed, may discharge through the nipple; the process is

rather a low grade inflammation with some necrosis of the periglandular connective tissue, desquamation of the glandular epithelium, and the formation of cysts. These cysts are apparently not formed by the retention of the breast secretion caused by the blocking up of the lacteal ducts; but are due to the inflammation about the glandular structures and inflammatory softening and dilatation, such as can be seen in the early stages of the formation of a bronchiectatic cavity in the lung. The cysts and the dilated ducts are often filled with debris, occasionally with milk and colostrum corpuscles. The general connective tissue of the breast is infiltrated with small collections of leucocytes and the number of connective tissue cells is increased. These are the cases which König has properly designated chronic mastitis, and are illustrated in Case I.

2. The second type of cases are those which are more distinctly of an adenomatous type and are those described by Schimmelbusch and Reclus. Two varieties may be distinguished microscopically,—one in which the glandular acini are filled with masses of cells which have grown out from the walls of the gland; the other, in which the lumen of the acini or the cyst is filled with a papillary outgrowth which simulates an adenoma. The centers of the cell masses may also soften down and form cysts. Cysts may also occur as simple dilatation cavities, having then a lining of flattened epithelium and containing a thin milky or a thin or thick serous fluid of a yellow or brown color, as in case Czarmoniska. The contents may become inspissated and form the so-called butter cysts of the breast. The connective tissue stroma in these tumors varies greatly, even in different portions of the same breast. There may be a large amount of interstitial tissue, either dense in character or soft and infiltrated with a few leucocytes; or there may be very little connective tissue and the tumor may be entirely made up of epithelial structures and cysts. The tumors frequently present a very different appearance in different portions of the growth. One section may show only dense connective tissue with a few normal gland tubules, while a section from another portion of the same breast may be composed mainly of cysts and enormously dilated glands with the lumina filled with cells from the proliferation of the walls. When the gland tubules are actively proliferating, there is as a rule a marked infiltration of the surrounding tissues with leucocytes. Most of the tumors may be included in this category.

3. *Transition Cases with Malignant Changes.*—The breast may contain a small perfectly mobile tumor with all the clinical and gross anatomical appearances of an adenoma; carcinomatous changes may, however, have taken place in some portion of the tumor and invasion of the axillary lymph nodes already begun. Only a minute portion of the tissues may be so involved and the greatest patience is required to find the carcinomatous area which has furnished the cells for the invasion of the lymph-nodes. This is one



of the dangers of relying on the examination of a small section of such a tumor removed for diagnosis, for the remaining portions of the breast in these cases may show the same adenomatous growth in the gland tubules as in those cases in which no carcinoma can be demonstrated.

The morphological distinctions between the adenomatous forms with proliferation of the epithelium of the acini and invasion of the surrounding connective tissue by the cells of the new growth, and the cases in which a true carcinomatous change has taken place, are not always very sharp. It is this fact which led Brissaud to state that the adenomatous type described by Reclus was malignant in its nature, and to draw no distinctions between those cases in which there was simply a proliferation of the epithelium invading the surrounding connective tissue and those in which an actual change to carcinoma had taken place.

The most important point, and one which is absolutely diagnostic, is the invasion of the lymph nodes in the axilla. This process takes place very early in the dense fibrous tumors with small cells in distinction to the soft tumors with large cells. The difference seems to be entirely a mechanical one and to depend upon the ease with which the cells are carried by the lymph current.

The second point is the invasion of the lymph channels of the breast by the cells of the carcinoma. This invasion can be easily distinguished from cross sections of the acini by the presence on the walls of the lymph space of the layer of endothelium, which normally lines it. There is also no basement membrane such as is seen in the connective tissue surrounding an acinus.

The third point is in the morphology and arrangement of the cells themselves. The cells of a carcinoma are larger than those of a proliferating gland, the nuclei are larger, the chromatin network is better marked, and division figures can usually be found if the preparation is carefully searched. The cells of the inflamed and hyperplastic glands sometimes extend beyond the line of the basement membrane, but only for a short distance; while in a carcinoma the cells are generally not seen in direct contact with glandular structures, but widely scattered throughout the lymph channels of the connective tissue.

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#### HEREDITARY SYPHILIS.<sup>1</sup>

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AN accepted definition of hereditary syphilis is that it is a syphilis transmitted at the time of conception, either through infected semen of the father or an infected ovum of the mother, or through both. The recognition and treatment of this condition are very important from the standpoint of the physician, as much can be done in the way of prevention and treatment, and from the standpoint of the moralist, the sympathy which is called forth by the innocent victim of its progenitors' errors, stimulates us to persevere in our utmost endeavors to help these unfortunate beings.

Usually where syphilis is inherited, it is the eldest child that suffers most, and often it is the first-born only which is affected (this, of course, when the disease is not contracted by a parent after one or more children have been born), showing the lessened tendency to transmit the disease as time goes on. This is a natural tendency and is marked, even in the cases which have not been subjected to treatment.

Hereditary syphilis differs from the acquired form in being constitutional from the first. There is no chancre, nor in the course of its development can the manifestations of the disease be classed under distinct periods for while they may correspond in type to secondary or tertiary lesions, a chronological order, such as in acquired syphilis, is not present. For the first two years or so after birth secondary and tertiary manifestations appear side by side. Later and about the time of puberty, if lesions appear, they belong exclusively to the tertiary type. The local lesions of hereditary syphilis do not differ in themselves from those of the acquired form. The main point of difference between the two lies in the profound alteration which the former impresses on the general nutrition and development—as, for instance, a well-marked case, with its accompanying, always intractable and very often fatal marasmus, or again, in the acute inflammation of the epiphyses and later chronic osteoperiostitis, producing often marked and typical deformity, as, for example, the sabre-blade deformity of the tibia and the nodes upon the bones of the cranium.

In making a diagnosis of hereditary syphilis, the family history is, of course, a most important point, and with this we will have many and varied symptoms and conditions to consider, as is the way with syphilis whenever it occur and however it may be contracted. To enumerate all the symptoms which may appear in cases of this disease would lead us to consider probably every organ and tissue of the body, and would consume more time than is at my disposal.

<sup>1</sup> Read before the North Branch of the Philadelphia County Medical Society, October 8, 1903.

In a case of average severity the child may seem in perfect health at birth, the first definite symptoms making their appearance about six weeks later—these commonly consist of coryza and a quite characteristic erythematous (or, in some cases, papular) rash; the favorite localities being about the anus, genitals, thighs or forehead. The secretion from the nose forms scabs and excoriations, the corners of the mouth become sore and perhaps ulcerated, healing slowly and leaving scars which are carried through life. The mucous membrane of the larynx may become affected, producing a characteristic hoarse cry, and unless the infection is very mild, there is marked anemia and wasting, the skin appearing shriveled and shrunken. The effects of the poison seem very depressing, the digestive organs are interfered with; the infant wastes away and in many cases dies. The mortality is high in those which show a marked syphilitic infection, while, on the other hand, those who suffer in a less severe form, and are early subjected to treatment, gain flesh and improve rapidly, but later, or about the time of puberty, symptoms which correspond to the tertiaries are apt to appear in a more or less severe form.

When the fetus has received a large or virulent dose of the syphilitic poison, or for some reason in the embryonic state, it is more susceptible to the infection, the infant, if born alive, survives but a short time—a few minutes, or perhaps a few days. And so we might cover the entire gamut, from the mildest taint, with only ill-defined and perhaps very late symptoms to the opposite extreme of the malignant form, where the patient is overwhelmed with the poison and cannot survive.

Hutchinson says the diagnostic recognition of hereditary syphilis is a matter of much difficulty in all stages of the malady, and the belief that it is easy leads to constant errors. He says in making the diagnosis it is necessary to have a combination, in a marked form, of snuffles, a ham-colored eruption on certain parts of the body, a general wasting, senile physiognomy, etc., and that none of these alone is of much importance.

While we know this is true in respect to a positive diagnosis, and also that every child which has coryza or a skin eruption is not syphilitic, still I think we are inclined, and properly so, to look with suspicion on any child which has a positive family history in this respect, and which shows even few and rather ill-defined symptoms, and to give them the benefit of antisiphilitic treatment.

As to the subject of treatment, it does not differ in principle from that of acquired syphilis, but in practice there are some elements which we have not to deal with in adults:

1. *The Matter of Prophylaxis.*—It is well known that the administration of mercurials to the tainted mother while pregnant will very much reduce the chances of the offspring being affected.

2. *The Question of Nutrition.*—This is a very important consideration. It is essential that the

diet of these infants be looked after with the greatest care; that they be breast fed, if the mother is able to furnish good milk, and if this is impossible, that their food be adapted with the greatest nicety, and that hygienic rules be observed with the highest possible exactness.

3. *The Manner of Administering Specific Treatment.*—It is unnecessary, and, I think, unwise, to give mercury or iodides unless some symptoms appear. In the early stages, when there are symptoms, mercury should be given by inunction, bichloride baths, or by the mouth, in the form of gray powder, calomel, etc., though I have found the mercury and chalk to be effective and the best tolerated. Later, in what corresponds to the tertiary stage, potassium iodide, mixed treatment, etc., must be resorted to.

I wish to report briefly a case which recently came under my observation, which seems to illustrate a few points in the discussion of inherited syphilis: (1) There were no early manifestations of the disease, only a rather late development of tertiary lesions; (2) the large doses of potassium iodide, which were taken without any difficulty, and (3) the happy effect of medication.

William C., aged six years and nine months; father and mother living and well at present; two brothers, thirteen and twelve, and one sister four years of age. According to the mother's statement, she contracted syphilis from her husband ten years ago; had the usual secondary symptoms and was treated for the same, taking medicine for eighteen months. No marked symptoms since. She had three miscarriages following date of infection, then gave birth to this boy, who seemed in perfect health when born. He was breast-fed for one year, and, except for an occasional cold or some slight ailment, continued well until about January of this year (1903), when he was six years old. He was brought to St. Joseph's Hospital March 10, 1903, and at this time showed a distinct swelling over the middle metacarpal bone of the right hand. This swelling had been noticed about three months and at the time of the examination was seen to be inflammatory in nature, the surrounding skin being shiny, tense and red. The mass pitted on pressure, and there was well-marked fluctuation. There was also a fluctuating gummy mass, non-inflammatory in character, occupying the position of the lower portion of the biceps tendon of the right leg, and seemed to be within the sheath of the tendon. This swelling was painless; the one on the hand was somewhat painful on manipulation. The patient also complained of fugitive pains in the leg and head.

Under an anesthetic the diseased hand was incised and curetted. With the probe necrosed bone could easily be felt, and the probe could be entered into the canal of the metacarpal bone. The wound was given general antiseptic treatment and the boy received alternately, inunctions of mercurial ointment and internally bichloride, gr. 1-24 and KI. gr. v. t.i.d. The potassium iodide was increased ten

grains a week until he was taking 50 grains t.i.d., and he has continued this dose ever since with no signs of iodism and entire disappearance of all symptoms for which he came under treatment. The hand is entirely healed and, except for a little stiffness, he has perfect use of it.

### DIFFICULT CASES OF INFANT FEEDING.<sup>1 2</sup>

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THE problem of the artificially-fed baby is usually a complex one. There is no branch of medicine or surgery which is more difficult of comprehension or taxes the resources of the physician more than does the rational feeding of an infant, especially if he comes across that infant after a few weeks or months of improper feeding.

Thinking that perhaps a description of a few of the most common cases of difficult infant feeding which have occurred in my own practice during the past few years might be of interest to the Society, I am induced to write the following paper.

There is all the difference in the world between the way of bringing up an infant at the present time and that of twenty years ago. We have all heard the views expressed by some fond grandmother of the *terrible* way in which babies are brought up nowadays. It is nothing like the good old-fashioned method! This is true, and it is a matter for congratulation that there have been marked changes in the care and feeding of infants from the days of long ago. The dirty-mouthed baby, the foul nipple, the microbic nursing bottle incubators and the cholera infantum milk have all been relegated to the realms of the past. But, surely, notwithstanding the rapid advances made in infant-feeding, the general practitioner is bothered, and bothered as nothing else can bother him, regarding some little patient who has been improperly fed. What, then, are these cases?

A baby is brought into the world, a healthy, normal baby, is started on breast milk, and for a time all goes well. Then the mother's milk gives out, or the mother decides that it would be much less trouble to let her nursemaid attend to the baby's feeding; or, because her infant vomits, he is put on the bottle, the physician never being consulted at all. The average New York mother of the higher class who is perplexed by the servant question, by social duties and strained domestic relations, makes a very poor *cow*. The pace of living is becoming faster and faster, and where our nursing mothers will be in ten years' time, if this hurried, nervous state of living exists, I must frankly confess, I cannot tell. In 99 out of 100 cases, when an infant who has been hitherto unaccustomed to cow's milk, is put for

the first time upon that diet, he is given milk far too strong for him. He may grow fat and seem to do well on this heavy food, but he is getting carbohydrates, fats, and proteids enough for a baby of six months; his flesh is flabby and not like the firm, pink flesh of a healthy baby. An early excess of fats and carbohydrates diminishes proteid metabolism, and the crash finally comes. Baby's appetite wanes, he loses weight, attacks of constipation and diarrhea make themselves manifest, and a chronic gastro-enteritis is set up.

Then what occurs? The mother, or nurse, thinks that, as cow's milk does not agree with the baby, other substitutes will be borne better. Condensed milk is now tried. Just as she put the baby on too strong cow's milk, so now she puts the baby on too weak condensed milk. The condensed milk is thrown aside, as it, too, does not agree with her baby. Then begins a continual dietary change, and the poor infant is put through a lightning change of all the patent foods on the market—each with the same result that, when first begun, all seems to go well for a day or so and then the baby goes back to a state worse than at first. As a dernier resort the physician is summoned! He finds himself facing a hard proposition. Here he has a baby with practically a ruined digestion—a proteid digestion practically nil, gastro-enteritis, flabby muscles, slight fever at times, loss of weight, and an alabaster skin. What, then, should be done with a child in this condition? It has been my practice when confronted with a case like this to tell the mother that her baby has been improperly fed and overfed from birth, that it will take a few weeks—in some cases even longer—to get him started correctly and that, unless she places her baby under the care of a trained nurse or else follows directions to the letter, I will have absolutely nothing to do with the case. This is essential in my mind for the proper feeding of such an infant. I have often, in similar cases, where the parents could not afford a trained nurse, been told that the mother did just as I directed, but I knew she did not, as results proved.

Such an infant should have his stomach washed out daily with warm water, especially if there is much vomiting. It is astounding, in this condition, to see the mucus that can be washed away from a baby's stomach. Stomach washing is done by means of a small, soft rubber catheter (20 F.); a connecting tube of rubber and a glass funnel. Also give the baby's bowels a good flushing out, with a decinormal salt solution; use a long, soft-rubber rectal tube. It has been my plan to start these babies on a weak cereal water, such as barley water, for a few days, until their digestive apparatus is in a better condition to assimilate food.

The baby should be weighed every day at the same time, and should be weighed naked. After a few days of this barley water diet, add *one teaspoonful* of cow's milk to one of the bottles of barley water and note the result. Watch the stools for curds. If many curds are present and

<sup>1</sup> Read before the Riverside Practitioners' Society.

<sup>2</sup> Received for publication April 19, 1904.



if there is much colic, put the baby back on barley water for a little longer. If all goes well, add one teaspoonful of cow's milk to every feeding; then, after two days, add two teaspoonfuls of cow's milk to every feeding, and so on gradually get the baby back to a feeding of which he can take care. Never feed a sick child on a special formula; formulas are for healthy children.

Oftentimes a baby of this class will not be able to assimilate even the smallest amount of proteid, and I do not think that, if a baby has a weak proteid digestion, the addition of barley water to the milk will cause him to assimilate more proteids. This addition of barley water may more finely divide the curd, but if the child can only digest so much proteid, that is all he can digest, no matter in what form or dilution it is given to him. I have seen cases where a baby could not digest cow's milk at all, no matter in what dilution. These milk idiosyncracies are not at all uncommon. Again, we may have a baby with a ruined digestion, and when we proceed to feed this baby with proper food, he will not take it. Let him starve, then, until he does eat, do you say? If you do this, he certainly *will* starve. How are you going to feed this baby and make him drink his food? The food is given to him by gavage. The method is simple and when, after a few times, the baby finds that his stomach is filled whether he likes it or not, he will prefer drinking his meals to having a rubber tube pushed down his throat. Vomiting babies who will retain no food when it is given them by the bottle do well and retain their food when it is given them by means of gavage. A baby may be too weak to take his food in any other way. I have seen many cases of feeble digestion, where a teaspoonful of unsweetened condensed milk to three ounces of water or barley water was assimilated, when no other form of nourishment would be borne.

In some cases feeble digestion begins at birth, but usually the difficult cases which we are called upon to treat are those of a digestion ruined by wrong feeding. Improper nursing from the breast is a great factor in the causation of malnutrition. The mother's milk becomes poor from indiscreet diet, etc., or disease, and, notwithstanding this poor milk, the baby is still fed upon the breast until he breaks down. Breast milk should be frequently analyzed in order to see whether it contains the proper amount of nutritional elements, namely, fat, sugar and proteids.

Other cases of malnutrition are caused by acute illness, such as pneumonia, whooping-cough and influenza. In all cases the problem is the same: to adjust the food to an infant whose powers of digestion and assimilation are very feeble and easily disturbed. We often see babies who are chronic vomiters and are made so by their mothers or nurses jouncing or handling them continually after they have been fed. These babies stop vomiting at once when placed in the hospital.

Proteids are the ingredients which usually

cause trouble in artificially-fed babies, and, as I said before, the majority of babies are started on food that is far too rich in proteids. A certain amount of science in the feeding of infants is to be encouraged, but a thoroughly scientifically-fed baby, who has all his food sterilized and put up by men wearing white caps and operating gowns and who are *supposed* to mix fats, proteids and sugar with accuracy (?)—I say that for these *aseptic* babies I have absolutely no use whatever. In a properly constructed home there is surely money enough to buy two quart bottles of eight-cent good milk, a 16-ounce graduate and a few 8-ounce nursing bottles. With these articles and a little time on the part of the mother or nurse, baby's feedings can be made at home with ease and comfort. On the other hand, there are times when laboratory milk is not only useful but of great importance. I speak of cases of improper digestion in babies who of needs must travel, or are at times isolated from a source of good milk supply, or who are in a disease-infected district. In these cases laboratory milk has worked wonders.

Condensed milk is one of the worst curses upon a community of babies. "What is easier," says the young mother, "than by following the directions on a can of condensed milk to rear a big, fat, healthy child? It is absolutely no work at all." A sixteen-cent can of condensed milk in the ice box, or, more generally, in the *bathroom*, a spoon and some water, that is all. Baby, for a time, gets big and fat. He beats all the babies in the block in weight. We have all seen these square-headed, feeble-boned, open-fontanelled, big, fat, rickety babies with a rosary on their ribs that can be seen across the room. "It was no bother to bring *him* up," says the mother. No, her bother has *just begun*.

So much against condensed milk. Now, a word or two for it. It is unquestionably one of the best foods to switch off on if baby's stomach becomes a little upset, as it were, from too much proteid. For a short trip, or in a district where good cow's milk is not procurable, condensed milk answers admirably. Among the poor in a great city in summer many babies would die were it not for condensed milk. The mothers have no means to keep cow's milk, and condensed milk tides many a tenement house baby over a critical heated period.

In closing, let me cite a case which is picked at random from many that I have seen during the past few years. It simply illustrates the average case of disordered digestion from the usual cause, namely, improper feeding.

*Case.*—A. B., six months old; breast-fed for one month from birth; weight at birth, eight pounds. Both parents healthy. This infant, without the advice of the attending physician, and upon the advice of a nursemaid, was taken from the breast for fear that "he would drain the mother's strength," and was placed upon a mixture of almost pure cow's milk. The baby lost weight, cried at night, had attacks of constipa-

tion and diarrhea and regurgitated his food. The nurse now told the mother that the cow's milk was too strong for the baby and that he must be put on prepared foods. He seemed to improve for a week or two, but went back to his disturbed state soon afterward. One food after another was tried, and all with the same result. The family now thought it high time to consult a physician. The baby presented the true characteristics of an overfed baby. His stomach was washed out, his rectum and colon were flushed, he was put on barley water with a gradual addition of milk, as I have heretofore outlined, and in three weeks one would hardly have known the baby. He has since been well and is now two years old.

What conclusions may we draw, then, from this essay? I think they are (1) The artificial feeding of babies is not the simple and easy problem which some of our lay friends seem to regard it. The physician should be consulted frequently in every case where a baby is fed by either breast or bottle. Every baby is a law unto himself and should be fed as an individual; (2) the general public should be taught that they should not and cannot feed the rising generation of infants on "any old thing," and in any way that they choose. A baby's food should not be experimented with by the laity. It is the baby's life, and parents have no right to trifle with it.

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#### TRANSITION OF OBSESSIONS TO DELUSIONS; WITH REPORT OF TWO CASES.<sup>1</sup>

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In physiological life the following fact is very frequently observed: an idea, a sentence, a word or an image may unexpectedly invade our mind and obstinately persist. It is sufficient, however, to exercise our will to a certain extent and make this phenomenon disappear without leaving any trace. This is a *physiological obsession*.

Should this condition persist in spite of the will, or should the will be unable to vanquish the irresistible condition in spite of repeated efforts, the phenomenon will become morbid and we are then in presence of a *pathological obsession*. Here the individual is conscious of the feebleness of his will, he realizes his inability to resist this morbid tendency and his will power is annihilated by the unknown force called obsession. Should he attempt to oppose this force and struggle, considerable efforts will be required of him, emotion and anxiety will set in and he will suffer.

We therefore see that between the physiological and pathological obsessions there is only a question of degree, but there is a certain condition which must be absolutely present for the development of the pathological form of obsessions,

namely a special mental make-up which forms the basis of the so-called degenerates. Only individuals with an insufficient mentality, only those whose will-power is compromised or lost, those who show hesitation, timidity or want of determination in every sphere of life, those who are unable to adapt themselves to circumstances, those who become accustomed early in life to introspection and to analyzing their own psychic life, those who show a dissociation of the personality,—these are the individuals of whom Magnan speaks as affected with cerebrosplinal ataxia, ataxia of thoughts, sentiments and will, ataxia of the psychomotor functions. The tendency to obsessions forms an inseparable element in these individuals, it is born with them and it remains for a long time in a latent stage. Although the attacks of obsessions are only episodes in the life of the degenerates, nevertheless by virtue of the fact that they are intimately associated with their psychic make-up, one cannot avoid considering them as psychic stigmata of the degenerates. These morbid psychic phenomena, showing some mental disturbance, are nevertheless not true insanities. They are only the expression of a faulty mental equilibrium and their evolution is such that they are constantly threatened with a break. It is, therefore, evident that insanities should be expected in individuals presenting morbid obsessions. We often see cases of mental affections, in which a previous history of various neuroses and obsessions can be traced.<sup>1</sup>

A close analysis of obsessions will show that their immediate cause is the lack of control of the will. The patient preserves his reasoning power, he is conscious of the want of harmony between the will and the inability to remedy the condition. Should this condition persist for a long time and should the patient whose psychic make-up is unstable begin to analyze the obsessions, he is apt to lose all power of critical judgment, become passive, cease to struggle against the overwhelming obsessions; his consciousness, which helped him to struggle, becomes absorbed, and he then accepts the condition as an inevitable phenomenon, finding complete justification for it and ascribing it to some tangible cause. The patient then reaches the final step of the pathological evolution of the obsessions and we are in presence of a genuine delusion.

We mentioned above that there is only a difference in degree between a physiological and pathological obsession. The same difference likewise exists between a pathological obsession and a delusion which developed from an obsession. The analogy which exists between obsessions in general and systematized delusions appeared so striking to Arndt, Mendel and Morselli that with good reason they gave the name of "*rudimentary paranoia*" to certain forms of obsessions.

Cases of insanity with previous obsessions are not at all rare, that delusions may develop in addition to obsessions is also known and that a cer-

<sup>1</sup> Read before the Philadelphia Neurological Society, April 26 1904.  
<sup>2</sup> Received for publication April 30, 1904.

<sup>1</sup> See "A Note of Psychoses of Early Puberty." A. Gordon, *Phila. Med. Jour.*, Sept. 6, 1903.



tain obsession by a process of progressive development will gradually become a distinct and well-defined delusion is by no means so unusual as some alienists pretend. According to Ségla, who became interested in the subject in 1889, the transformation of obsessions into genuine delusions affects only the so-called "intellectual obsessions," especially those of doubt or indecision and then the form of persecutory delusions is the most frequent. The delusional transformation of obsessions was observed in confusional insanity, melancholia and paranoia and the origin of it lies in the dissociation of consciousness which exists in a primitive stage in those that are affected with obsessions.

It was the writer's good fortune to have under his uninterrupted observation within the last three years two such cases, and to keep detailed records showing the possibility of such an occurrence. The cases are briefly as follows:

*Case I.*—H. D., aged twenty-eight years, civil engineer, three years ago began to notice that he had to repeat his prayers in church several times before he could be convinced that no word had been omitted. At first the disturbance was confined only to the church prayers, but three months later the night prayers at home began to disturb him in a similar manner. He worried considerably over it. He would not be able to go to sleep for fear the night prayers were not said by him completely. Then he would have to get up in the middle of the night to repeat the same act. Being perfectly aware of the absurdity of this state of affairs he would make attempts to control himself and resist the overwhelming desire to repeat the prayers. Then he would become agitated, restless, irritable; he would struggle with himself, but finally would have to submit to that great power which had captured his consciousness. After the act of repeated praying was done, he would become calm and peaceful.

Thinking that perhaps the presence of strangers would help him to overcome the irresistible act, he often made appointments with his friends. Before them he would say his prayers in a loud and distinct voice. He was, therefore, convinced that no words were omitted. However, some time after the departure of the guests he would gradually go back to his previous state and would feel gradually coming on the necessity of repeating the act of praying. Again he would struggle and again he would be overpowered. As this obsession at first concerned only the one act of his life, his daily work did not suffer in the least. Once while at work he was suddenly taken with a chill, became covered with perspiration, began to tremble and cry. He felt that on the previous night he did not repeat often enough his prayers and that he must do it now. He kept on crying and struggled with himself, but the more he struggled, the more he suffered. He had to yield. After that he would have to quit his work several times during the day and pray. At first he did it two to three times a day, but later he was compelled to do it oftener. It is, however, certain that this

was done every time not without a great amount of resistance on the patient's part, and every time he would pass through a series of nervous disturbances similar to those mentioned above.

The patient's health suffered considerably, as the inability to overcome the obsession had an exhausting effect on him. Headache, anorexia, general weakness in addition to the insomnia, made their appearance. As the condition did not change and the repetition of the above described act became very frequent the patient, although still conscious of its unreasonableness, began to analyze the obsession. He asked himself at first only occasionally and later more frequently the question: Why should he have to pray so often and what is the reason that no other act of his life disturbs him? At this phase of his disease he contented himself with these questions without being able to explain. But afterward he went further and insisted upon an explanation which he gradually discovered. He says: As almost two years have elapsed from the day when the necessity of praying repeatedly came on and as he finds that he must do it now very often, there is certainly some divine reason for it. He is and was most undoubtedly a sinner, said he, and the Lord, who is kind and fatherly, inclined to every human being, necessarily wishes him to be better. This is the cause why He prompts him to pray often.

The patient's wife and relatives attempted to divert his mind from the newly coming thoughts, but without avail. More and more he became absorbed with this irresistible idea of self-condemnation. He considered himself now a religious sinner, he had erred against the Lord, his religious views were not according to the teachings, he was not a good man, he deserved all that had happened or will happen to him.

The delusion was well formed. The patient's life, character and disposition changed entirely. He refused to work, as there is no use, he says, he will die shortly. Spends his time in worrying and complaining of his unfortunate fate. In the intervals he would pray and pray almost constantly for forgiveness. He did not struggle any more with himself, he did not attempt to overcome the desire of praying, he did not question any more the necessity of praying, as the latter was no more an obsession. On the contrary he hurried to pray, fearing he had not done enough of it, because he now wished to redeem himself, to obtain forgiveness for the lack of religious behavior in the past. He is, therefore, totally *delusional*. The patient became morose, would refuse to see his friends or to go out. He would never ask for food, if it was not offered. As the insomnia increased, he was found several times walking in his room and either praying or talking to himself. Sometimes he would be seen with outstretched hands at the window looking in the dark space and talking aloud. He developed visual as well as auditory hallucinations. The patient presents now an averred case of a typical melancholia with systematized delusions and hallucinations.



*Case II.*—Mrs. A. G., aged thirty-five years, is taking care of a butcher-shop. Her husband, who is alcoholic, very often neglects his work, and she is therefore obliged to work hard. At the age of ten years she had chorea and at fifteen night terrors. She was always considered unusually bright. Two years ago while handling the knife with which she cuts meat for customers, she suddenly felt the necessity of doing some harm with it. She could not tell at the time to whom her desire was directed. Since then this impulse has come on frequently.

At first she felt it when she was using the butcher-knife for business. Later on the same sensation would be present when she even looked at the knife. She was a woman of a mild temperament, charitable and very kindly disposed toward every one with whom she came in contact. She could not understand why she should feel the necessity of using the knife for a purpose other than for business. She reasoned with herself and, being fully conscious of it, she soon began to fear the knife. As she was the only one in the shop to do the selling, she had to use the knife very often. The constant fear, that some harm may be done by her, put her in a state of anxiety which she could not overcome. As soon as the knife was in her hands, she could hardly use it properly, she would make mistakes, would interrupt the cutting repeatedly and before the work was done she would show signs of suffering; her skin at first would be flushed and at the end of the act would be pale and covered with a profuse perspiration. At times she would not be able to finish the work, was compelled to throw the knife under the table and dismiss the customer.

For a long time the patient suffered agonies. She often came to me to seek relief from this torture. She struggled heroically against this overwhelming feeling, but every time she was overpowered. One morning she came to me informing me that she spent the whole night in thinking over the misfortune and that after due consideration she arrived at the conclusion that her husband is the fault of her suffering. He leads a very irregular life, drinks to excess, maltreats her and her trouble is due no doubt to the worryment he brings upon her by leading a life of debauchery. Gradually she fixed her mind upon this idea and all my efforts to dissuade her were of no avail. She was convinced, she says, of the truthfulness of her explanation.

We, therefore, see that the mental analysis of the future delusion began at this phase of the patient's affection. Very soon a new phase made its appearance. She told me that her husband often expressed his dissatisfaction with her appearance and that he regretted having married her. Now, she says, he makes her miserable intentionally, because he wishes to get rid of her. She was taken at first with a dislike to him and soon began to despise him and her children, of whom she had previously been fond. She conceived the idea that her oldest daughter conspired with her husband against her, as she often saw

them talking quietly together. She became suspicious, her suspicions being directed even against her youngest child, who was only five years old. She began to watch her relatives, strangers and customers. Once she overheard a conversation between her oldest daughter and a neighbor and immediately became suspicious of the latter.

The idea of using the knife with the intent to do harm did not annoy her any more. She did not suffer, as she did not struggle with herself. Upon being questioned she replied that she feels the necessity of using the knife against her husband, as he deserves it; all, in fact, says she, deserve to be killed, as she is the victim of her husband's persecution and everybody is conspiring with him against her.

Being more and more convinced that he intends to free himself from her and that he fully made up his mind to torture her, so that she may die, she began to take special care of herself. She would see that the door of her room was tightly closed and locked so that he would be unable to poison or shoot her. She would also examine her bed-clothes, the bureau, the drawer in the table. She was convinced that some day some explosive would be put under her bed-clothes by her husband and she would be blown up. At night she would lay awake for hours and at the slightest noise would get up and listen.

Hallucinations soon developed, but curiously enough they were unilateral. It was only on the right side that she would see visions and hear sounds. The latter were of a threatening character: shadows, terrible faces would approach her to the right and curse her. She thought of protecting herself and for this purpose placed in her room pokers, pieces of iron and the butcher-knife.

In spite of all the vigilance on the part of the family, who was constantly warned by me, she succeeded in eluding them. One night her sister, who was placed in the next room to watch her, heard a terrific noise from the patient's room. At once she went there and found her sister armed with a poker in one hand and a knife in the other breaking the bric-à-brac, windows, mirrors, etc., screaming, shouting and threatening. No words could pacify her and force had to be used to remove the knife from her. Upon being questioned she replied that her husband, who is her greatest enemy, sent devils and animals against her in order to get rid of her as soon as possible. At this phase of the disease as well as before the hallucinations set in I insisted upon the commitment of the patient, but was met with great opposition. The family looked at my proposition with great disfavor, as the old view of considering a commitment as a disgrace still persists and is very difficult to combat. The patient was removed from the city and sent to relatives in the South.

The two cases just related appear to me to be highly instructive. The mental analysis and the continuous introspection which gradually led our patients to delusional insanities were exceedingly interesting from a psychological standpoint. We

could see that when the stage of obsessions was overstepped, the mental introspection which is one of the characteristic features of obsessions, gradually vanished, the consciousness of the mental analysis which is always present in obsessions, gradually merged into those mental processes that constitute the approaching delusion: the patient's personality forms then an integral part of the new morbid ideas, they lose all psychic inhibition, and become slaves of their ideas. Then the previous morbid introspection takes a different orientation. The patients commence to find a harmonious connection between the outside world and the world of their imagination. While before they were only observers or witnesses of their obsessions without being able to explain them, now they find logical reasons for their morbid thoughts; absolute conviction takes place of doubts.

The two cases reported here are of interest, not only to the psychologist, who wishes to draw comparisons between mental processes in normal and pathological states, but also to practical psychiatrists. From the latter standpoint the present contribution puts on record cases showing not only the development of mental affections in individuals with neuropathic tendencies, but also the fact that the so-called neurasthenic insanities may cross the border-line and shape themselves into genuine psychopathies. Finally the transformation of obsessions into delusions by means of a gradual accentuation and of a special orientation of the first—is the most interesting and the most important feature of the present essay. Mental analysis, which seems to be the *sine qua non* of progress in the intellectual domain providing the normal intellect guides it and directs it in the proper channel, may become the origin of special pathological phenomena. The comparative study of the physiological and pathological obsessions, also of delusions, shows that they represent various stages of the same mental analysis. The transformation of one form into another depends upon the favorable or unfavorable basis on which they develop. The mental analysis in a degenerate is always a source for various psychic disturbances; at first obsessions, later genuine delusions.

In conclusion I wish to call attention to the curious hallucinations of my second patient. Some writers, basing their position upon anatomical data, deny the existence of unilaterality of hallucinations (Soury and others), while on the other hand its existence is admitted by many psychiatrists. But the tendency to explain all sorts of hallucinations by means of certain specific cortical localizations is in my judgment of the same order as the desire to find a relation between hysterical and organic anesthetics. Our anatomical and physiological knowledge of the cerebrum is as yet too incomplete to authorize us to explain properly even those psychic phenomena that are dependent upon certain cortical centers. Mental operations are exceedingly complex and any special center of the sensorium by itself is not at all sufficient for their realization. Unilaterality of hallucinations, despite its apparent contradiction, with our ana-

tomical conception of certain centers of the brain, exists nevertheless and, like many other mental phenomena, is not in a strict relationship with special cortical areas, but it depends upon multiple conditions. It should, therefore, have a place in mental semeiology.

## MOOT POINTS IN THE TREATMENT OF FRACTURES.<sup>1 2</sup>

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It is somewhat presumptuous on my part, in the face of so many existing treatises, to offer you anything of striking novelty in dealing with fractures, but I hope to impress upon you such features in their consideration as I have gained from nine years' experience at the dispensary, in teaching and from private practice. These deductions are based on three thousand cases.

First and foremost is the question of diagnosis of the fracture. It is all too common to see the medical attendant who suspects a fracture immediately try to elicit crepitus. Now the error here is, in not trying to determine the point of maximum tenderness by the gentlest palpation. For to this level, if at all, the efforts necessary to elicit false motion and the crepitus incident to it should be limited, and, therefore, I would emphasize the dignity that should be accorded localized tenderness, for it is often the only conspicuous symptom pointing to fracture. There is also a transmitted point of tenderness, *i.e.*, if the bone in its continuity be subjected to pressure, the pain is referred to a remote point which will be found to correspond to that of localized bone tenderness. Still another useful method of determining localized bone tenderness may be spoken of as bipolar bone tenderness, which is elicited by pressing together the two articular extremities of the bones, whereupon the patient will also refer the pain to the level of the fracture.

Up to this stage it is apparent that it is possible, without an anesthetic and without torture, to determine the existence of a fracture. Where deformity exists, and fracture is self-evident, it may eventually be necessary to use an anesthetic, to correct it, so the patient can again be spared the painfulness of crepitus. Until this moment arrives, from a humane standpoint, crepitus is in our estimation to be *subordinated* as a foremost sign of fracture; its greatest value is but relative to aid in differentiating fracture from dislocation, and it should then be elicited only under anesthesia. But as anesthesia carries with it a certain danger to life, the advent of the X-ray was heralded with great delight as a more humane method. This it has certainly proved to be, and where fracture has to be differentiated from dis-

<sup>1</sup> Read before the Harlem Medical Association of the City of New York, Feb. 4, 1904.  
<sup>2</sup> Received for publication March 7, 1904.

location, it should unhesitatingly be employed in preference to anesthesia. In a general way, we would limit the use of anesthetics to the fractures of joints and of badly displaced and greatly impacted fragments.

In very young infants, no anesthetic need be employed. A quick, sharp movement will suffice to restore the alignment of the bone. The use of X-rays is not at all satisfactory in fractures of the joints of young children, since the epiphysis is so largely made up of cartilage, that the shadow does not form.

Fractures in the length of the shaft of adults do not urgently call for the X-ray as a means of diagnosis.

We must admit then that the simplest clinical methods, as of old, are ever at our disposal to recognize fractures in general. As the diagnosis of fractures and their replacement occupy so short a time, we advocate the use of ethyl chloride for this purpose, if any anesthetic be called for. Children who are terrorized by the X-ray can often be better examined under anesthesia and X-rayed at the same moment, if necessary. So much for the general principles covering the use of X-rays.

When called upon to treat a fracture, we often find ourselves in a quandary what to do first. At the best, be it said, nothing, until the right device can be applied. Barring this extreme injunction, we should suggest the application of a rubber or any bandage with moderate pressure to reduce the swelling.

In general, there is a tendency to the over-treatment of fractures. Our aim should ever be toward gaining a quick restoration of function, even if at times the alignment and cosmetic be not as perfect. This view I have begun to hold mainly in regard to joint fractures. Too much credit and not enough blame is placed upon the use of various devices in their treatment. The lower extremity left out of consideration for statical reasons, a callus at the expiration of two weeks is firm enough to keep the fractured ends of the bone in place, so that infant, youth or adult should, in most instances, be without splints at the expiration of this time, and the simplest of active, not passive, motions should then be allowed.

**Prognosis.**—The outcome of a fracture should be viewed from a medicolegal point of view, and we would then shape our prognosis in more exacting terms as to permanent and partial disability and length of time required for complete cure. Experience has taught us to be guarded, even in the most favorable cases. Instances may be multiplied of the occurrence of fat embolism, with sudden death, as occurred to the writer, in a case of fracture of the tibia one week after removal of the cast, or a musculospiral palsy incident to a perfectly healed fracture of the shaft of the humerus, and so on.

**Apparatus.**—The use of any ready-made splints, except in fractures of the thigh, should

be deprecated. The best stock in trade are the simplest materials, plaster-of-Paris, pasteboard, cigar-box wood and non-absorbent cotton.

We want to dwell at some length upon the much maligned plaster-of-Paris. It is in such disfavor because the plaster bandages at our disposal, retailed in the shops, are improperly made and unfit for use. It is unfortunate that it is mainly in institutions that their use is best understood. Such plaster-of-Paris bandages as are sold in the shops may be made fit for use by unrolling, getting rid of the excess of plaster and rerolling them more loosely. The amount of pressure used in applying a roller bandage holds good for plaster bandages, a snug-fitting stocking, flannel or muslin bandage should be applied beneath.

In very stout and aged people, the use of plaster-of-Paris roller bandages is not advised, nor in infants on the upper extremity. Here we would rather use the molded plaster-of-Paris splint. Those who dread the ill consequences of a roller plaster-of-Paris bandage may split one its entire length just after its application and, if necessary, such a bandage may be so removed as to be fit for use again. To this end, all fancy devices are to be discarded and a mitre saw used which makes a straight line and ceases to cut upon reaching the muslin. The latter can then be cut with shears, the cast reapplied and held together with adhesive straps. Save such instances of spiral or oblique fracture with constant tendency toward displacement, we might wholly dispense with apparatus, for perfect adaptation is the best means toward perfect union.

We now pass on to the consideration of some special fractures. Until a few years ago, it was held that a fracture of the metatarsal bones rarely, if ever, occurred as a consequence of indirect violence. The army surgeons of all European nations had encountered a peculiar affection of the foot of the soldier on the march, known as foot-swelling (*Fussgeschwulst*), *piéd forcée*. This received the most fanciful interpretations until the advent of the X-ray solved the mystery. The clinical picture is as follows: Either in the act of prolonged or forced walking or after imparting a sharp thrust to the fore part of the foot, a smart pain is experienced in the metatarsus. The individual persists in walking and a swelling appears over one of the metatarsal bones, usually the fourth. This is due to the callus which grows larger from day to day as the foot is used. With rest alone, the swelling subsides, but the application of a plaster-of-Paris bandage greatly facilitates matters. Such instances are encountered in civil practice.

Bennet's fracture is another but little known fracture. It is encountered as a fissure of the metacarpal bone of the thumb, caused by indirect violence. It is overlooked because of the absence of any callus or deformity, but characterized by a line of tenderness, extending along the entire length of the first metacarpal bone.

In the treatment of elbow-joint fractures, the



schools are as much as ever divided. To ascertain the exact direction of the line of fracture, and which bones are involved, are matters of great difficulty. Notwithstanding the existence of the X-ray, it is not possible to learn more precisely the particulars of this variety of fracture. Most of these occur during the period of adolescence and as the epiphyses are not ossified before the age of eighteen years, the cartilage is not pictured in the shadow of the X-ray. The question, therefore, remains: What can be clinically diagnosticated in fractures of the elbow-joint to enable intelligent treatment? Barring fractures of the olecranon, which are easily recognized, fractures of the neck of the radius and, finally, fractures of either condyle, all else as to line of fracture of the lower end of the humerus and the position of displaced fragment is largely speculative, whether or not the X-ray be used in one or more planes, or an anesthetic be given. It is held that such fragments can be replaced while the patient is under narcosis. This is frequently a physical impossibility, for the fractured ends of the lower part of the humerus are, in the first place, too small to grasp in the presence of the large amount of blood, nor can their position be influenced by any leverage exerted in motions of the forearm. It is necessary, as in other fluctuations, to rely on surface markings, such as hematomata, abrasions and ecchymosis which indicate the point of impact. Thus we learn to know the direction of force which determines the particular kind of fracture. Kocher has shown that these may thus be differentiated with ease clinically.

If the patient falls on the hand, the pronated radius transmits the force to the external condyles and fractures it. Again, if he falls on the olecranon, with the arm abducted, a like result follows. On the contrary, a fall on the elbow, with the arm abducted, fractures the internal condyle. In fractures of the internal condyle, extension and flexion are not as free as in fractures of the external condyle. Since the olecranon is mainly concerned in these motions, extension is possible to a greater degree than in external condyle fractures; and, again, the distance of the olecranon from the external condyle is greater than the internal.

The diagnosis thus reasonably determined, what shall be our attitude in the treatment of this fracture? There are those who make a hard and fast rule in treating this affection to vary the position at stated fixed intervals, hoping thereby to avert ankylosis and lessen the callus formation. Others, again, adhere to a fixed line of treatment, expecting thereby to better the position and healing chances of the fracture. We have tried both methods and have had failures. We think that in the long run what is to be aimed at in the treatment of elbow fractures is their restoration to useful function. The forearm, at right angles, or nearly so, is such a position. The fragments will heal as quickly in the

flexed as in the extended position, and ultimately flexion is made.

It is our practice, if much deformity exists, to anesthetize the patient in order to remedy this condition; if no deformity exists, the forearm is left in its natural position at the time of fracture and, if possible, is brought near to a right angle without causing great force, and retained in a right angle pasteboard splint, where it remains for two or three weeks. At the expiration of this time, all callus having fixed the fragments, the forearm is placed in a sling and the patient allowed to move it of his own accord. The weight of the forearm often carries it into the extended position; the sling can then be again adjusted to a higher level, so as to bring the elbow into more marked flexion. Thus, gradually, by the fourth to the sixth week, the patient can voluntarily use the elbow over a wider area, and then, aided by massage and gymnastic exercises, further results are accomplished.

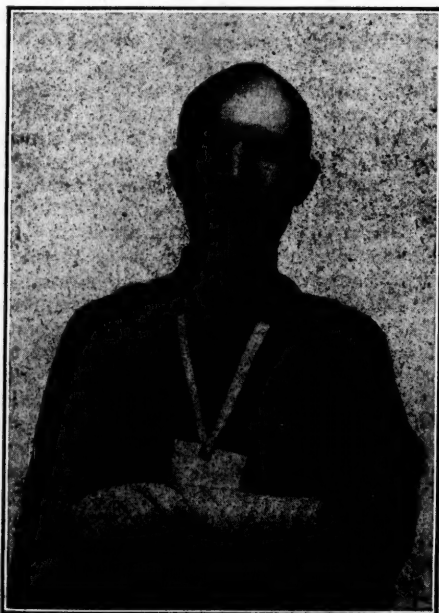
Similar to the sling, we have found the Thomas' halter of great service in children. The method of Jones' acute flexion is also simple and very effective. But, after all, the main point we wish to impress is that, with the lapse of time, the larger number of patients, young adults mainly implied, get a most useful arm, limited but few degrees in flexion or extension. A very small percentage, notwithstanding all treatment, have a permanent deformity, spoken of as *cubitus varus*. To offset this result, it was Allis' idea to treat the arm in extension to preserve the carrying angle, but in any case flexion must eventually be employed.

Kocher, Lane and a small following favor primary resection of the offending external condyle, and offer assurance of no interference with the growth of the arm. It has been claimed that these elbow fractures are mostly epiphyseal separations and that, therefore, the growth is likely to be interfered with. In answer to this be it said, that the line of fracture is *juxtaepiphyseal* and lies in the diaphysis and not the apophysis, wherefor no interference with the growth need be feared.

In Colles' fracture it is now universally agreed that a perfect reduction is the *sine qua non* for its healing. Here the X-ray has taught us that this fracture is no entity, as was originally held by Colles. A common clinical error is the notion that Colles' fracture and silver-forked deformity are synonymous. We have encountered the silver-forked deformity only exceptionally. An accurate diagnosis can be made by noting the differences in the level of the styloids of the radius and ulna. Normally, that of the radius lies at a lower level than the styloid of the ulna, but in fracture of the radius these styloids approach a level. This is known as the sign of Lanier and is used in skiagraphic work to determine old fractures. Next to this, local tenderness at some point over the lower third of the radius is most significant of fracture. The greater number of

Colles' fractures do not call for an anesthetic in their reduction. Only those attended with marked displacement, and they are fewest in number, require anesthetics. Once reduced, there is no tendency to redisplacement. For the location of fragments is caused by the violence and is not supplemented by muscular action. We have in 90 per cent. of cases treated these fractures by

Fig. 1.



Suspension treatment of Colles' fracture.

suspension. It is a method spoken of by Malgaigne, brought to the fore by Moore, of Rochester, warmly endorsed in Heidelberg, and spoken of last year by Bier, as the ideal method. We have tried it in hundreds of cases and report the following advantages: great comfort, permitting the use of massage to the muscles of the forearm and earlier restoration of wrist motion, with less chances of ankylosis.

Where there is an effusion into the wrist joint, we also strap the wrist. Very deformed cases, even though they be reduced, do better under Rose's posterior splint. All devices in any way immobilizing the wrist joint are to be deprecated, since they favor ankylosis.

Fractures of the humerus, if low down, require some kind of extension device, as Bardenheuer's method of vertical suspension, in addition to the plaster-of-Paris. The weight of the shoulder should be used for counter-extension, in order to guard against overriding of the fragments, which is apt to follow from the pressure of the plaster-of-Paris bandage, if the elbow be included in the dressing.

In fractures high up, the upper fragment has

a tendency to be abducted, so the lower must be made to follow, by the insertion of a wedge pillow in the axilla, and the whole arm should then be bandaged to the chest with a snugly fitting plaster-of-Paris bandage investing the shoulder, or a splint, which answers the same purposes, made out of cardboard or plaster-of-Paris.

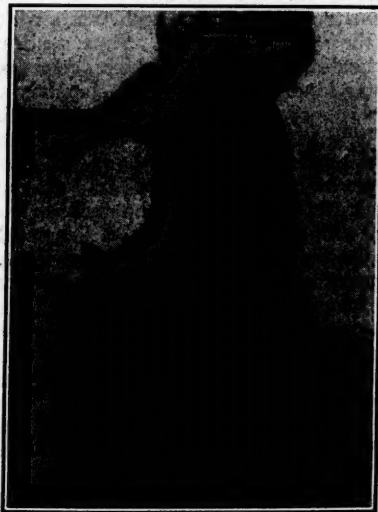
I want to call attention to the difficulty of diagnosing fracture of the tuberosities, yet this is possible if we study just what motions of rotation, outward and inward, or abduction and adduction, are impaired.

In fractures of the clavicle we have despaired of obtaining anything other than a union with a small callus. A particular point to which we want to direct attention is a method to facilitate recognizing the fracture. By placing one hand upon the clavicle and elevating the arm in the perpendicular plane, by pressing on the elbow, the fragments move and crepitus is appreciated in the gentlest fashion.

A simple Velpeau bandage is what we have finally come to in treating clavicle fractures. Sayres' is efficient, but requires great care in its adjustment and gives no better results.

Fractures of the hand most commonly en-

Fig. 2.



Illustrating the method of eliciting crepitus in fracture of the clavicle.

countered are those of the metacarpal bone. We wish to recommend the simple method of using a roller bandage, grasped by the hand, as an efficient splint. The extensor tendons are thus put on the stretch and act as a posterior splint, holding down the fragments which are, as a rule, slightly displaced, owing to the apposition of other bones, which also accounts for the fact that many days often elapse after the injury is inflicted before this fracture is recognized. Furthermore, it escapes detection because the

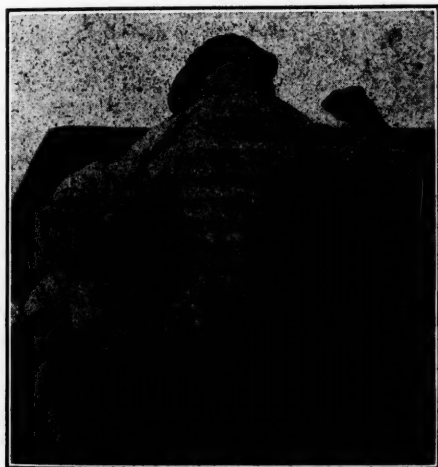
level of the line of fracture is near the articulation, and such motion as exists is interpreted as joint motion, but this mistake may be avoided by first locating the line of bone tenderness.

*Fractures of the Femur.*—I shall dwell mainly on those encountered in children. Here we have to contend with the undesirable feature that obliges these children to be on their back. If they are under three years of age, in the first stages of walking, a heavy plaster cast is unsuitable for ambulatory purposes and the use of a cast in the recumbent posture is a sorry thing at the best. For these instances, vertical suspension is an admirable method and one or both legs may be suspended, depending on whether the counter-extension of one buttock or both suffice to straighten the femur. This method of Hamilton or Shede is without doubt effective, though not pleasing to the eye. The toilet of the child can

pital, in turn, economizes in bed space. This method is applicable mainly to children under three years of age, though I have applied it up to the age of five, and it also suggests itself as an emergency measure until some definite plan is devised. For fractures in older children, not too high in the shaft, an ambulatory plaster splint is sufficient.

Your attention is now invited to the consideration of a form of fracture which was unheard of up to a few years ago. Finer study of the etiology

Fig. 3.

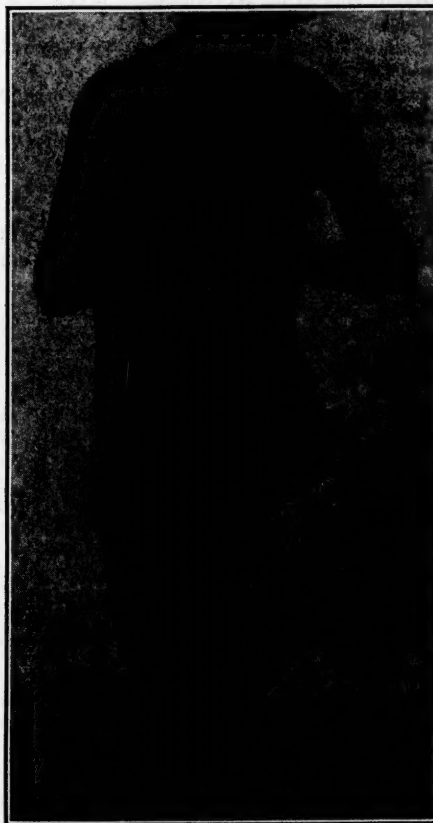


The pasteboard triangle for the ambulatory treatment of fractures of the femur.

be most readily attended. However, it has been a matter of discussion that in hospital practice and in cases discharged from the hospital who come to us in the dispensary, a vulvovaginitis is found. To obviate the necessity of keeping these infants on their back and overcoming the sanitary obstacles, we present to you this very effective little known, method, first brought to the attention of the profession by the late Dr. Van Arsdale, whose untimely death left its development to posterity.

By the aid of a pasteboard triangle, the fracture of the femur is treated in an abducted and flexed position; positions that both favor a good apposition of the fragments, and also permit of the proper toilet. All the while the infant can be carried in arms. The results of this method are highly pleasing and patients need not be taken to the hospital encountering the disadvantageous change of diet at so tender an age, and the hos-

Fig. 4.



A case of coxa vara following fracture of the femur.

of the coxa vara brought to light the fact that untreated fractures of the femur were responsible for them. Such children fall like adults, striking the outer aspect of the femur. It has not been definitely decided whether an infraction of the neck, or epiphyseal separation is the consequence.

The history of these cases is as follows: After a fall the child complains of pain in the hip, there may or may not be outward visible signs of fullness in Scarpa's triangle or back of the trochanter, but the motions are impaired.

Under these circumstances, a synovitis is diagnosed and the proper treatment instituted,



yet at the expiration of a very brief time, say two weeks, the child feels well and is allowed to walk. The gait is quite naturally halting at first; afterward, it is freer again, only to be followed at a later day by a limp. There are now external evidences of deformity. Elevation and prominence of the great trochanter, shortening and adduction. These are the consequences of allowing the child to walk about on a soft callus, as a result of which, the femur at the site of fracture bends under the weight of the body.

Since attention was first directed toward them these instances are fast being multiplied. Their treatment should be preventive, i.e., on suspicion of fracture. Rest in the horizontal position for four weeks with slight extension and abduction should be made imperative.

Fractures of the skull in children I deem worthy of special mention. They differ from those of adults, in that symptoms of cerebral compression are less pronounced and appear later. We are thus very apt to be misled as to the severity of the injury.

In infants under three years of age, the line of fracture follows the lines of ossification which

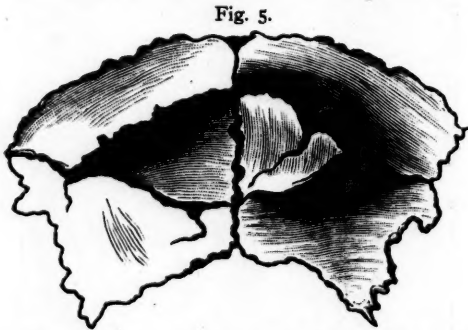


Fig. 5.

Showing extensive fracture of infant's skull without symptoms.

develops radically, and mistaking them for sutures, therefore, is very possible. The following history demonstrates the above remarks only too well: An infant survived her extensive fracture fourteen days, during which time she was discharged from two hospitals with merely a diagnosis of large hematoma. At the autopsy extensive fissuring of the skull was found. Just shortly before death, ocular symptoms were manifest, otherwise there were no paralytic symptoms of the limb, and the sensorium was close to that of a normal child until the last forty-eight hours, when she became comatose. About this time, I aspirated the hematoma. The microscopical examination of the fluid revealed brain cells. I would, therefore, in doubtful instances, recommend such a procedure to facilitate diagnosis before operation.

Fractures of the spine are perhaps the class par excellence, which would seem to call for operative treatment as soon as shock has passed off. But, unfortunately, most of the damage to the

cord and spine are done simultaneously by the same offending force.

The justification and indication for this operation are prompted by the humane reasons that we have a fair analogy in the treatment of fracture of the skull, and the additional ground that in spite of X-ray localization, lumbar puncture and cytodiagnosis with cryoscopy, we can make no accurate differential diagnosis, between laceration of the cord, or compression by the fragments, leaving out of consideration that in nearly every instance there is a hemorrhage into the substance of the cord. Fracture of the lamina are most favorable for operation, and the use of X-rays is of decided value in these instances.

**Fracture of the Patella.**—We are opposed to an inflexible rule of primary operation of the patella, for within three or four days, under elastic compression and massage, the effusion into the joint may be sufficiently reduced to permit the fragments to be brought into contact, and when this is possible this treatment may be further encouraged and the patient allowed to walk about with a plaster cast within two or three weeks. The muscles should be massaged each day while the patella fragments are fixed by an assistant. Operation is indicated in multiple fractures of the patella and where the above treatment is not immediately responsive. The sprain most commonly encountered is that of the ankle-joint, and we wish to enter a protest against the meaningless term "sprain," whose pathology *non est*. In our experience with increasing practice over 90 per cent. of these sprains of the ankle are fractures of either one or both malleoli. Crepitus is difficult to elicit, in the face of the effusion, but marked local tenderness over the tip of each malleolus can always be made out and indicates the exact lesion. A great number of these cases, those with slight effusion, can be effectively treated with adhesive strapping. The more marked ones demand plaster-of-Paris bandages, including the whole leg.

In this connection we want to emphasize that the ambulatory splint has come to stay and is the form of a plaster device. It is useful in Pott's fractures, simple fractures of the tibia, and fractures of the femur in individuals of not too great a weight. Its success depends upon its proper application.

Such a plaster bandage should be so applied as to extend from the heads of the metatarsal bones to the condyles of the tibia. The turns of the bandage should be made extra heavy, just above the ankle-joint, and directly below the condyles of the tibia, the whole weight being carried by the column of plaster.

All of our Pott's fractures are allowed about after several days, at the outside a week, and the confinement to bed for long periods is a thing of the past.

**Germany and Medical Practice.**—The Institute of German Physicians issues a warning to young men against taking up the study of medicine, there being at present a glut of young doctors.

## MEDICAL PROGRESS.

### SURGERY.

**Pyemic Glanders in the Human Subject.**—A case which is of interest from its fortunate termination and the extreme rarity of laboratory glanders, is reported by J. C. STEWART (*Annals of Surgery*, July, 1904). The patient was a young woman physician, of twenty-seven years, who had been working with material taken from two very virulent and fatal cases of glanders in men who had become infected from diseased horses. Both died on the seventeenth day with multiple abscesses of the skin and in extreme sepsis. The incubation period was six days, the doctor having made the autopsy on an inoculated guinea-pig while she had an open wound of the finger. There was an absence of the usual skin lesions and the purulent foci were limited to the voluntary muscles. The points aimed at in the surgical treatment of the case after an exact diagnosis had been made were, (1) delay in the hope that the foci might become encapsulated by inflammatory changes in the surrounding tissues, and that the patient might become, as far as possible, immune by the manufacture of her own mallein; (2) the avoidance of local implantation of the *Bacilli mallei* upon wound surfaces where foci were eradicated. Among the methods for the prevention of further inoculation, the application of 95 per cent. carbolic acid and alcohol was more effective than the actual cautery, and the wounds healed quite promptly. After the wounds were closed there were repeated attacks of high fever, pain and prostration, but the patient finally made a complete though tardy recovery.

**Sarcoma of the Clavicle.**—M. M. KRINKOFF's patient (*Roussky Vrach*, No. 21, 1904) was a girl of twelve years, who noticed a year ago a swelling on the right clavicle the size of a hazelnut. This continued to grow quite rapidly, reaching the size of a hen's egg. The tumor is round, painful, and quite dense. The skin over it is markedly distended, immovable, of a bluish red color, and pervaded by a net of blood vessels. The highest point of the swelling shows a beginning ulceration. The dimensions of the tumor from right to left (from its border at the left costo-clavicular articulation to the thickened end of the clavicle) are 28 cm., from above downward 32 cm., its circumference at the base 55 cm. The mobility of the joint is unimpaired; no oedema or pain in the right arm, neck, head or back. Operation under chloroform. Incision over the posterior surface of the tumor. The great amount of blood lost necessitated the injection of a physiological solution as well as the hypodermatic injections of camphor, while the large area of the resulting wound precluded the possibility of its closure, and it was protected by an aseptic bandage. The removed tumor weighed, together with the clavicle, 1,600 grms., and was shown microscopically to be a round-celled sarcoma. The course of convalescence was rather uneventful and the patient left the hospital fully recovered some six weeks after the operation. Unfortunately the further history of the case cannot be given by the author.

**Tumors of the Chiasma and an Operation for their Exposure.**—A case of this kind was reported by O. KILIAN (*Annals of Surgery*, July, 1904) in a boy in whom operation was decided on but was not carried out, as a sudden change in the boy's condition necessitated an operation for the relief of pressure in the lateral ventricles into which a cystic tumor had evidently perforated. The patient died a few hours later. Autopsy showed a cystic tumor, ruptured, in the region of the optic chiasma. The author worked out an operation

on the cadaver which he suggests might be applied in such a case. A Wagner flap in the shape of an omega is made with the frontal bone, the base of which lies about half an inch behind the coronary suture. The dimensions of this flap are five inches in the median line, seven inches for the width, and the base where it is broken off,  $3\frac{1}{2}$  inches. The skin incision severs the temporal artery on both sides. The opening in the skull is made with the electric fraise, and then the flap is completed with the saw. After breaking the flap, the dura is incised and the longitudinal sinus tied. The frontal lobes may then be lifted with a spoon and the optic nerves exposed. Care must be taken not to tear the olfactory lobe.

**Intravesical Separation of the Urine.**—The necessity of obtaining the absolutely uncontaminated urine from the two kidneys and of obtaining all of it for a given time, has long been recognized. Catheterization of the ureters afforded a ready means of obtaining this urine, but the method proved to be dangerous because of the probability of its being followed by ascending infection from the bladder. This would not be the case were it a fact that the bladders in patients requiring such investigation to be made were sterile, but such is rarely the case, and the tip of the catheter is almost certain to carry beyond the ureterovesical valve sufficient contamination to render ascending pyelitis, if not a certainty, a sufficiently grave possibility to contraindicate catheterization. B. G. A. MOYNIHAN (*Brit. Med. Jour.*, July 2, 1904) states that in his hands the segregator of Harris has not proved to be strictly reliable. This, as is well known, depends for its efficiency upon the principle of unfolding a tent-like structure in the rectum and expanding this beneath the trigone until two separate lakes with a ureteral opening at the center of each are formed in the floor of the bladder. Moynihan states that the first perfectly efficient instrument was created after some modification of the original pattern by Luys, of the Hôpital Lariboisière in Paris. It consists of three portions, a central one within which lies a chain attached at the handle of the instrument to a wheel. This portion, like the lateral parts, is straight to within about two inches of the end, where there is a marked curve forming almost a half circle. This portion is covered with a thin rubber sheathing. When the screw which works the chain is turned, the chain is tightened, and instead of lying in the hollow of the curve of the instrument, it is raised up, forming a diameter instead of a part of the circumference of the circle. The rubber sheathing is also raised up, and in this way a septum is formed. The lateral pieces fitting on to the sides of the central piece consist of two catheters having several eyes. Each catheter drains its own side of the bladder after the septum has been created. The Cathelin instrument is almost identical with this. When the instrument is passed, which is usually accomplished without the slightest difficulty, and it is felt to be within the bladder, it is withdrawn until the beak is in close contact with the back of the pelves. The septum is then liberated, and the water with which the bladder has been filled, is drawn away. Of Cathelin's instruments a variety of sizes are now made, so that with one or the other a fit of any size bladder can be made. Moynihan has found that Luys' instrument is difficult to pass in the male. He therefore considers it indicated in the female and Cathelin's for the male. He closes by stating that he considers the method an invaluable one and believes it to mark a great advance in our ability to differentiate renal conditions.

**Animal Cage for Laboratory Use.**—It is interesting to note that New York is following the example set

by Harvard and Johns Hopkins, in providing a means of carrying on surgical experimental work. DONALD GORDON, JR., and J. W. DRAPER MAURY (*Annals of Surgery*, June, 1904), present the working plans and a photograph of the cage which they have built for the Surgical Laboratory of Columbia University. The plans are drawn according to scale and are intended to be of practical service for those wishing to construct a similar cage. Any intelligent carpenter, in the opinion of the designers, can, by following these plans, construct a precisely similar cage. The characteristic of the cage is that it has an automatic self-flushing attachment similar to that in general use in public toilets. The odor, which is known to be extremely offensive in the case of all animals, but particularly of dogs, is in this manner kept largely in abeyance, and the animals themselves are reported to be much healthier than in the ordinary type of cage.

**Diagnosis and Treatment of Perforating Typhoid Ulcer.**—Any additional data and observations on this all-important subject are welcome. E. W. GOODALL (*Lancet*, July 2, 1904) states that the most important constitutional symptom is shivering. In 26 per cent. of cases this occurred at almost exactly the same time as perforation. It may be of all degrees of violence up to prolonged rigors. It occasionally precedes all symptoms, including the pain. The author cites a large number of cases which are studied with unusual care. He states in conclusion that inasmuch as everything depends upon early operation which cannot be made without early diagnosis, he would not now hesitate to open the abdomen if there were definite evidence of localized tenderness and rigidity, more especially if there had been shivering, even in the presence of little or no pain. In his opinion, peritonitis very frequently precedes the perforation. Unfortunately, however, the signs of this peritonitis are not at all obvious, so that the perforation exploration which has been advised does not seem to him practical. Rapidity of the operation is of great importance. This of course hinges upon the early finding of the perforation. In most of the cases, as is well known, perforation takes place within twenty-four inches of the ileocecal valve. In 60 per cent. of 55 cases, it was within twelve inches of the valve. The best incision is in the semi-lunar line below the umbilicus, except in the presence of localizing symptoms when the incision should be made over the site of the tumefaction. The establishment of an artificial anus is to be employed rather than radical operations of gut resection and union, if the perforation is found to be too large to close with a purse-string or Lembert stitch. These methods require so much time that the low vitality of the patient seems in most cases to discountenance them. Inasmuch as there is almost always a certain amount of peritonitis accompanying the lesion, most of these cases should be drained. The author has used local anesthesia in one case only, and this was unsuccessful.

### PHYSIOLOGY.

**Innervation of the Stomach.**—Agreeing with other observers, W. P. MAY (*Jour. of Physiol.*, June 30, 1904) finds that the vagus contains both motor and inhibitory nerves for the stomach musculature. But, at variance with other investigators, he concludes that the splanchnic nerves have no direct influence whatever, either motor or inhibitory, on the muscular wall of this organ. The effect of vagus stimulation in the cardiac and pyloric sphincters is practically the same as in the stomach. First one obtains an inhibitory effect, followed shortly by an augmented effect.

**Movements of the Colon.**—Antiperistalsis is a characteristic feature of the muscular activity of the colon, according to T. R. ELLIOTT and E. BARCLAY SMITH (*Jour. of Physiol.*, June 30, 1904). The regressive movement of material so produced explains the need of a strong ileocolic sphincter, and is to be correlated with the development of the cecum. Such antiperistalsis consists merely of moving rings of constriction originating in the circular muscle, and not abolished by nicotine. It is not a coordinated movement of contraction preceded by relaxation. A true peristalsis has not been observed to move reversely. The sacral visceral nerves do not control the cecum. Generally their territory is limited to the final part of the colon, wherein they cause both circular and longitudinal muscles to contract. The inferior mesenteric or sympathetic nerves carry inhibitory impulse to the cecum and to the whole of the colon. The latter tends to show a division into three regions of different activities, the proximal, intermediate and distal. These are completely distinct in the herbivorous mammal, antiperistalsis is then confined to the first division; the sacral visceral nerves control only the last.

**The Ileocolic Sphincter.**—The junction of the small and large intestine is controlled by a muscular sphincter, and not by a mechanical valve, according to T. R. ELLIOT (*Jour. of Physiol.*, May 3, 1904). Stimulation of the sympathetic nerves causes the sphincter to contract, though at the same time inhibiting the circular muscle in the wall of the ileum and colon adjoining the sphincter. In the cat these sphincter fibers issue chiefly from the thirteenth thoracic and first and second lumbar roots. Both anemia and adrenalin produce the same effect as sympathetic stimulation, that is, constriction of the sphincter. Removal of the spinal cord abolishes permanently the power of the sphincter to keep apart the contents of the ileum and colon.

**The Adaptation of the Pancreas.**—The frequency with which modern physiological research reveals the adaptability of the various bodily organs to changes in the environment or to new uses, is again shown by the recent discoveries of F. A. BAINBRIDGE (*Jour. of Physiol.*, May 3, 1904) on the human pancreas. The following is a summary of the author's conclusions: The pancreas, of adult dogs normally contains no lactase, although this enzyme is present in extracts of the intestinal mucous membrane of such dogs; yet when dogs are fed for two or more weeks on a milk diet their pancreatic juice, obtained by means of secretin, invariably contains lactase. The formation of lactase by the pancreas is a specific reaction to lactose; it occurs only when lactose is given by the mouth, and not when it is injected subcutaneously. The lactase of the pancreas is in no way derived from that present in the intestinal mucosa; it is formed by the pancreas itself and represents a definite adaptation to a milk diet on the part of the pancreas. The subcutaneous injection of extracts of the intestinal mucous membrane of a milk-fed dog into a biscuit-fed dog causes the pancreas of the latter to produce lactase. This is the only means apart from a milk diet by which the pancreas can be made to manufacture lactase. Extracts of the intestinal mucosa of biscuit-fed dogs are ineffective. The adaptation of the pancreas to lactose is carried out by a chemical mechanism. Lactose acts upon the intestinal mucous membrane to produce some substance, which is carried in the blood-stream to the pancreas, and stimulates the latter to produce lactase. Secretin appears to have a definite composition, is in no way modified by difference of diet, and is not con-



cerned in the adaptation of the pancreas to food; it calls forth the secretion by the pancreas of all the enzymes present in the gland at the time. The pancreas of new-born puppies contains no lactase, although the enzyme makes its appearance within a few days. It has not yet been determined how far this process is also a chemical adaptation.

**Ionic Permeability of the Red Blood Cells.**—The red blood cells of man and the frog acquire under the influence of  $\text{CO}_2$  electrical properties by virtue of which their enveloping membrane becomes permeable to anions, according to R. HÖBER (*Pflüger's Archiv*, March 28, 1904). This permeability to anions does not occur in the absence of  $\text{CO}_2$ . The production of this condition is brought about by means of the hydrogen ions, whose point of attack are the anodic colloids of the enveloping membrane, which become cathodic. Cations like  $\text{Fe}^{+++}$  and  $\text{Al}^{+++}$  which act upon anodic colloids similarly to  $\text{H}^+$  produce no anion permeability. The production of the latter process is a reversible one.

**Production of Sugar in the Organism from Albumin and Fat.**—A critical and experimental research into this problem has been made by E. F. W. PFLÜGER (*Pflüger's Archiv*, May 25, 1904). In a previous monograph upon the subject of glycogen, the author showed that the production of this substance from proteid has not been proved. Theoretically the possibility of such a transformation is denied, for the structural elements of glycogen are not only uniform among themselves, but are wholly different from those of the albuminous molecule, whose constituents consist of various substances. Pflüger was of the opinion that glycogen is produced probably from carbohydrates or substances closely related to the latter. The author was able to show that in all known investigations the immense culmination of sugar in diabetics is explained by the amount of glycogen stored up in the organism. The above theory of the author was fortified by the fact that the liver cannot prepare glycogen from all forms of carbohydrates. Thus cane sugar and milk sugar, injected into the blood, pass the liver unchanged and are eliminated in the urine. It would only be necessary for the liver to hydrolytically split cane sugar and milk sugar in order to produce glycogen. The liver does not possess this capacity. This would be difficult to understand if the liver had the power of building up glycogen out of the numerous hydrolytic producers of albumin. It has been found that the total extirpation of the pancreas, performed by a careful and skilful surgeon on a well-nourished dog at one sitting is really followed by no diabetes. On the other hand, if the pancreas be removed piecemeal, at several sittings, diabetes will result. What is the explanation of these differences? In the first place one must recognize a condition discovered by Hoffmeister, known as "hunger-diabetes." A dog in whom the nourishment is considerably reduced will eliminate a considerable quantity of sugar. The author explains this phenomenon as follows: The result of starvation is to show the burden of metabolism upon fats and carbohydrates. But inasmuch as fat can be oxidized only after it has been transformed into sugar, it follows that the greater part of metabolism proceeds through sugar. This results in a strain upon these cells that are concerned in the elaboration of sugar with a consequent exhaustion and alteration of function. The quantity of sugar, therefore, which would otherwise satisfy all the needs of nutrition is no longer oxidized and consequently appears in the urine. This form of diabetes occurs without extirpation of the pancreas. In the case of a starving

animal, in which the pancreas is partly or entirely removed, a traumatic diabetes, resulting from the operation is added to the starvation diabetes. If, however, after extirpation of the pancreas the animal be fed, the resulting digestion and absorption occasion an increased volume of blood, an augmentation of the work of the digestive cells, and a stronger peristalsis. These conditions powerfully stimulate the numerous wounds in the abdominal cavity and lead to a reflex production of sugar. At the same time the absence of the pancreas impairs the process of digestion and the fats pass largely unchanged with the feces. The author successfully repeated the experiment performed by Seegen and confirmed by Weiss, namely, the formation of sugar by the digestion of liver substance with fat and fatty acids.

**Influence of External Hemorrhage on Proteid Catabolism.**—The knowledge of the chemical changes brought about in the organism as the result of the loss of a large amount of blood will form an important basis for future clinical and pathological researches along this line. P. B. HAWK and W. J. GIES (*Amer. Jour. Physiol.*, June 1, 1904) found that external hemorrhage, equal to from 3 to 3.5 per cent. of the body-weight, of dogs, produced the following effects: In well-nourished animals, in weight and nitrogen equilibrium, and fed continuously on a diet of constant composition, there was a temporarily increased output of nitrogenous and sulphur containing products in the urine, and a valuable effect on the elimination of phosphorized substances, though mainly a decreased elimination of the latter. Total solids in the urine were increased with the nitrogen and sulphur catabolism. These effects were relatively slight after one bleeding of moderate amount, but became more marked and lasted longer with repeated losses of blood. The increased elimination of the catabolic products occurred only in the urine. The amount, consistency, and composition of the feces were apparently unaffected by the hemorrhage. Digestion did not appear to be materially disturbed at any time, even after several severe hemorrhages at short intervals. There was little or no effect in intestinal putrefaction. Body-weight steadily declined in the original equilibrium diet after each bleeding. When the animal was allowed to eat freely hemorrhages were followed by gradually increased weight. Moderate loss of blood markedly increased the appetite and caused thirst, even during periods when the animal was receiving an excess of food. Excessive losses of blood had apparently an opposite effect. Volume of the urine and its specific gravity fell at first after hemorrhage, then rose far above the average for several days, returning shortly to the usual average. Hemorrhage caused an immediate stoppage of the formation of urine, a subsequent retardation of flow, and finally a decided stimulation. It also inhibited the hypersecretion of saliva during ether anesthesia. There was an occasional glycosuria, due solely to the anesthetic.

**The Part Played by Benzine in Poisoning by Coal Gas.**—Coal gas produces first excitation and then rigor of the isolated frog's muscle, according to R. STAHLIN (*Proc. of the Royal Soc.*, Vol. 73, No. 489). Frogs exposed to coal gas show excitatory phenomena which are absent when the animal is placed in an atmosphere of  $\text{CO}$  or nitrogen. The specific effects of coal gas in frogs are determined by the presence of benzene in the gas, and can be produced by air containing the same percentage of benzene. There is no reason to suppose that the poisonous effect of coal gas in mammals is determined by anything except its content in  $\text{CO}$ .

**The Physiological Action of Radium.**—The effects of this substance on the principal constituents of the body—albumin, carbohydrates and fats—has been studied by J. WOHLGEMUTH (*Berl. klin. Woch.*, No. 26, 1904). He exposed these for a period of from fifteen to thirty minutes daily to the rays and made an analysis at the end of five days. Repeated trials showed that the composition of the materials was unchanged. It was also shown that the elective action on lecithin, as claimed to exist by Schwartz, had no foundation on fact. The effect of radium on tuberculous lungs was studied by exposing them to the radiations, and it was determined that the exposure in an incubator resulted in the absorption of an amount of nitrogen four times greater than that of the control specimen. This is explained by assuming that the resistance to autolysis after death is lessened by the action of radium. If this is correct, then the difference in the amount of nitrogen would become less as the resistance of the control specimen was overcome. This was actually found to be the case, for after ten days the amounts of nitrogen in solution were practically the same in both specimens and continued so.

### MEDICINE.

**Effects of Endofaradization and Endogalvanization on the Stomach.**—A study of the effects of these measures on the gastric secretion, motility and sensibility has been made by A. BORRI (*Deut. med. Woch.*, 1904, No. 26), who also found that the reports made by different sources varied greatly. His own observations were conducted on ten persons, two of whom were practically normal as regards their gastric and intestinal conditions. The aggregate number of individual tests was 106. Regarding the secretory functions of the stomach he found that neither form of current had any effect, the occasional changes in the hydrochloric acid and pepsin contents being attributed by him to the procedures necessitated by the introduction of the electrical apparatus. It was shown, moreover, that the normal stomach, in contrast to the atonic one, exhibited a comparatively greater degree of contraction on application of the faradic current. Disturbances of motility cannot be said to be in any way markedly influenced by the faradic stream. The galvanic current, however, seemed to exert a favorable influence on sensory disturbances of the stomach, and the author feels certain that this effect was gained independent of suggestion. When the negative pole was placed in the stomach a well-marked anodyne effect was noted, but the writer is not prepared to explain this action.

**Epidemiology of Typhoid.**—It is some fifty years ago since Pettenkoffer advanced his ground-water theory, to explain the occurrence of large epidemics of cholera and typhoid. His theories have not been generally accepted, but now, at last, R. EMMERICH and W. GEMÜND (*Münch. med. Woch.*, June 21 and 28, 1904) have brought convincing proof which shows that the water-supply plays only a subordinate rôle. With high-ground water the germ cannot multiply, since the necessary food-stuffs and air are washed out of the superficial layers, and since the temperature is too low to permit of reproduction. As soon as the ground-water sinks water will travel from below upward by capillary attraction and dissolve the organic and inorganic constituents of the soil; furthermore the pores are filled with air, the temperature is more suited for active growth and the rays of the sun will kill off a large number of saprophytes which would interfere with development. From one focus in the soil the germs are spread by the shoes of those who travel over it, by rats, mice

and many insects and worms. These facts can be experimentally proven by filling a cylinder with soil and dipping its lower end into a fluid containing cholera germs in suspension. There will be a capillary flow in an upward direction, and in eleven days the entire column will be infected. If the soil has been washed so that it contains no nutritive material the bacteria die off rapidly. Under favorable conditions the germs do not die off before thirty days; this corresponds with the fact that epidemics generally last thirty-five days. As the cholera germs proliferate downward into the deeper strata of the soil the capillary stream will carry up with it some of the products of their metabolic activity, chiefly the enzyme cholerade, which limits the development in the superficial strata. It is a well-known fact that certain cities are immune from cholera; this is also due to peculiarities of the soil which here is made up entirely of clay, consisting of small, sharp particles which are in constant motion and thus destroy the germs mechanically. Cities situated partly on sand, partly on clay, are only partially immune. The majority of symptoms which make up the disease cholera are merely evidences of nitrite poisoning and depend upon the property of the bacteria to reduce nitrates which occur abundantly in drinking water and many vegetables. Individuals who carefully avoid nitrates will often escape during epidemics. In very much contaminated soil the proportion of nitrates is usually high, and the reducing power of the germs is greatly enhanced where there is an excess of these salts, hence exceptionally severe symptoms can be expected under such conditions. The practical deduction is that proper irrigation of soil during dry weather will be the best safeguard against epidemics.

**Virulence of Sputum in Pneumonia.**—Since the sputum of severe or fatal cases of pneumonia is highly virulent toward mice, while that of mild cases hardly affects them. D. STÜTZ (*Zeitsch. f. klin. Med.*, Vol. 52, Nos. 5 and 6) determined to investigate if the time which elapses before the animals die bears a definite relation to the severity of the disease. In every instance one cubic centimeter of the fresh expectoration was injected subcutaneously. Two different mice, injected with the same sputum, generally died in approximately the same number of hours. In fatal cases the animals lived eight to eleven hours, in cases with doubtful prognosis eleven to twenty hours, and in mild cases twenty to thirty-five hours. The virulence does not fall with the crises, but remains relatively high for twenty-four hours, hence other factors bring about the crisis. With exacerbations the virulence also rises, and since this rise occurs before the appearance of physical signs, it is of considerable practical value. It is thus advisable to inoculate a mouse every morning and evening.

**Specific Precipitin Reaction for Bothrioccephalus.**—A very interesting communication is presented by ISAAC and VAN DEN VELDEN (*Deut. med. Woch.*, 1904, No. 27) on this subject. From a case of *Bothrioccephalus latus* infection they prepared a solution obtained by autolysis under aseptic precautions from the fresh proglottidæ. With this they were able to obtain precipitation when added to the blood serum of the patient afflicted with the disease, but failed to get any reaction with the serum of a healthy person. Rabbits were treated with the solution, and the serum from the latter showed similar phenomena. This was confirmed by control tests in normal animals. It appears, therefore, that certain albuminoid bodies pass from the *Tænia* into the patient's circulation, which being in the nature of foreign materials, succeed in producing specific precipitins.

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**SATURDAY, AUGUST 13, 1904.**

**DR. GEORGE F. SHRADY.**

THE resignation of Dr. George F. Shradý, as editor of the *Medical Record*, comes as a surprise to the profession. For thirty-eight years he has conducted this well-known journal, establishing for himself the longest editorial record in the country; and it is with regret that we learn that he is no longer to be the presiding genius of the paper he has conducted from its start.

Through the most exciting years of medical discovery Dr. Shradý has sat on high, watching the scientific heavens for new stars of thought; and the sky has been brilliant with them: Bacteriology, antiseptis, Koch's tubercle bacillus, appendicitis, yellow fever, and others too numerous to mention. Each and all he has recorded year by year, discerning with a keen eye the true lights from the will-o'-the-wisps that flicker over the medical horizon.

His position has been an enviable and an honorable one, that of disseminating new truths to the world, and he has filled it with a dignity and an energy of which few other practising physicians are capable.

Among the many inestimable services that Dr. Shradý has rendered to the medical profession, we single out the high ethical and professional standards of medical literature that he has always

proclaimed and practised, and in any controversy in which the honor or the privileges of the profession have been concerned the practitioner of the country has always had a worthy and high-minded, as well as quick-witted spokesman.

The laity who are familiar with Dr. Shradý's name as one of the surgeons who attended President Garfield, and as an authority to appeal to in times of agitation, probably do not realize how much they owe to him directly for his strong influence in civic matters pertaining to health. Much of the excellent sanitary condition of New York City, as well as many matters referred to the Board of Health, owe their existence to his indefatigable energy in pushing reforms through, and in arousing physicians to a sense of their duty. His words, whether written or spoken, have carried authority among the powers that be, and have brought assurance to the readers of the daily press; so that in many crises of the city's development, in scares of cholera, smallpox, plague, his voice has been heard with profit.

That Dr. Shradý should resign his power in the prime of life is a loss to the profession, but it gives him a well-earned rest after what has been a long series of ardent and arduous achievement. We bid him an editorial farewell, feeling with him that the *Record*, which has been the child of his creation, will be in skilled hands, under the editorial direction of Dr. Thomas L. Stedman, and no doubt will continue to occupy the position of prominence that Dr. Shradý has made for it.

## INFECTION IN TUBERCULOSIS.

THE recent discussion of the subject of infection in tuberculosis at the New York Academy of Medicine (see Society Proceedings in this week's *MEDICAL NEWS*, page 327) brought out a number of interesting conclusions drawn from recent observations and study with regard to modes of infection and tuberculosis, which should be familiar to all of the medical practitioners of the country.

It seems very clear now that while the infection with tuberculosis by means of inhalation may be an important factor in the production of the disease, there are very striking considerations which make this seem much less than it used to be considered. For example, Dr. Jonathan Wright, of this city, who, as a distinguished specialist in diseases of the nose, throat and larynx, has had many opportunities for the study of this question, does not hesitate to express a reactionary opinion, which must carry no little weight. He consid-



ers that it is practically impossible for dust particles to find their way past all of the protective mechanisms that nature has spread so abundantly before the only mode of ingress to the lungs. After all, it should be borne in mind that all air must, in normal individuals who breathe through the nose, pass through the tortuous nasal passages, which are almost sure to catch and retain any foreign particles that may be in the air. If by chance, however, dust particles or minute globules of expectorated material should find their way past the mucous membrane of the nose, there are still abundant opportunities for them to be caught and retained before entering the lungs. The passage into the lungs is not direct, but almost at a right angle and at every portion of the course, moist mucous membranes are ready to catch dust particles or any other material that may be present. Even if air with infectious material in it should find its way into the pharynx and be carried by the current of air toward the lungs, there still remain the two narrow chinks between the true and the false vocal cords to be passed before they find entrance even to the trachea. The chink of the glottis is very narrow and foreign particles of any kind must find their way through only with the greatest difficulty and by the merest chance.

Even, however, if they find their way into the trachea, this does not assure them direct entrance into the lungs except when the breathing is very deep and fast, for it is only at such times that air is ever carried directly beyond the large bronchi into the smaller air passages. Ordinarily, in quiet breathing, the air currents of respiration do not pass much below the bifurcation of the trachea, and the interchange of gases necessary for vital processes takes place by means of diffusion. The air in the large bronchi is comparatively quiet, and from it any particles that may be present are likely to settle by means of gravity on the moist mucous membranes, where they are retained. From here they are inevitably carried by the ciliary processes of the cells outward, and so there is very little chance of them proving really infectious. Just how, in inhalation, tuberculous infection of the apexes of the lungs takes place is rather difficult to understand. After all, it is too much to think that air containing particles of solid material is carried directly by means of a current into the small alveoli of the left apex, for instance, whose infection is the most frequent initial lesion in tuberculosis.

After comprehending these difficulties as re-

gards inhalation tuberculosis, the recent observations with regard to possibilities of tuberculous infection through the intestinal tract, become even more interesting than they would otherwise be, though they represent some of the most important additions to our knowledge during recent years. Professor von Behring announced not long ago that in calves at least it is perfectly possible for tubercle bacilli to pass through an uninjured intestinal mucous membrane. Other observers have found this same thing to be true, especially when animals are fed rather plentifully on fatty materials. Fat droplets are taken up directly by the mucous membrane and passed on to the lacteals. If these fat droplets contain tubercle bacilli, these are not pressed out during the passage through the mucous membrane. Dr. Ravenel, of Philadelphia, in a series of very important observations on dogs fed with butter, which had been mixed with tubercle bacilli, found the bacilli in the thoracic duct and in various portions of the absorbent system four hours after the animals had been fed. It is easy to understand that bacilli carried up through the thoracic duct and poured into the venous circulation, to be carried almost directly to the heart and thence to the lungs, might very readily, under such circumstances, produce an infection of the lung without giving any sign of the fact that they had obtained their entrance originally into the body through the intestinal tract.

These considerations become of even more interest when it is realized that there is no doubt in the minds of most impartial bacteriologists, at the present time, that bovine tuberculosis may occur in human beings as the result of infection through the intestinal tract by means of food material contaminated with tubercle bacilli from cattle.

Even German investigators have found that, assuming the truth of Koch's principle of the special virulence of bovine tubercle bacilli, in a certain proportion of cases of human tuberculosis the bacilli present were surely of the bovine type. Besides Dr. Ravenel, such distinguished American investigators as Professor Theobald Smith and the late Dr. E. A. de Schweinitz (whose loss to American medicine will be felt nowhere more acutely than just in this subject) found the same thing to be true. There seems no reason to doubt, then, that Professor Koch's announcement of the non-intercommunicability of bovine and human tuberculosis is without foundation in truth and may easily give rise to added

dangers of the contraction of tuberculosis, if it should induce any relaxation of the laws for the protection of human beings against tuberculous infection from cattle either through meat or milk.

In a word, the whole question of modes of infection in tuberculosis is on trial as yet. It is perfectly possible that many of the cases of lung infection may be primary in the lungs and yet the infectious material may have come through the intestinal tract. It must not be forgotten that there is much more danger of dust getting into the mouth and then being swallowed in the sputum, perhaps to escape digestion in the stomach and find its way through the intestinal wall in emulsified fat than there is for it to gain an entrance into the pulmonary tissues when inhaled into the lungs. There is room for further investigation with regard to the occurrence of primary tuberculosis of the thoracic duct and of the possibility of infection through this. Even the occurrence of enlarged bronchial glands is not an absolute sign that the port of entry for the infection was through the larynx and trachea. Every physician who has the opportunity to make autopsies on cases of tuberculosis in an early stage, or on children who have died from tuberculosis, should pay particular attention to these points, since it is possible that much that is of great practical value may be learned from them.

## ECHOES AND NEWS.

### NEW YORK.

**Appointment of Dr. Jenkins.**—Dr. William T. Jenkins, ex-Health Officer of the Port and brother-in-law of Richard Croker, has been appointed Sanitary Engineer in the Health Department at \$2,400 a year. The appointment was made by Commissioner Darlington from July 1, 1904.

**State Experts for the Immigrant Insane.**—Dr. Sidney D. Wilgus of New York City has been appointed by the State Commission in Lunacy as chief examiner, under the law passed by the last legislature creating a State Board of Alienists to act in concert with the United States examiners at the port of New York in the inspection and return to their own country of all immigrants suspected of insanity, epilepsy or imbecility. Dr. Wilgus will receive a salary of \$5,000. The Lunacy Commission also appointed as assistant examiners and members of this board Dr. George D. Campbell of New York City and Dr. W. E. Sylvester of College Point at a salary of \$3,000 each.

**Northern New York Medical Association and St. Lawrence County Medical Society.**—It has been decided to hold the meeting of both these medical bodies on October 18, 1904, at Ogdensburg, N. Y., the Northern New York Medical Association holding session during the afternoon and the County Society during the evening of the same day. The

afternoon session will be held at the St. Lawrence State Hospital, upon the invitation of the Superintendent, Dr. R. H. Hutchings. The evening session will take place in the City Hall. Following the evening meeting a banquet will be held under charge of both societies. This arrangement will permit members of either society to attend both meetings and it is desirable that the members cooperate as far as possible to make this union meeting both pleasant and profitable by their attendance and participation. It is also urged that members who will present papers notify (giving title) the president of their respective society on or before July 25, in order that a provisional program may be prepared at an early date. Members are urged to present for the benefit of the Society any interesting cases occurring in their practices.

**Cost of Tuberculosis in This City.**—New York loses \$23,000,000 annually through tuberculosis, according to Dr. Darlington. "Estimating the value of a single life at \$1,500—not necessarily a high estimate—and taking only those lives between sixteen and forty-five years," said Dr. Darlington, "the loss of life in this city alone from tuberculosis mounts up to the startling sum of \$23,000,000 annually. The death rate here is much lower than in large European cities, which shows what has been accomplished by the spread of clinics and of preventive measures, of better housing conditions, of the warfare against dark, interior rooms, and unsanitary plumbing which has gone forward here during the last few years, yet the death rate will not go much lower with us unless we take even more radical steps. It is a question simply of educating the people and of general sanitary conditions. The general sanitary conditions are still bad in New York, and the inflow of immigrants who must be educated in right living is constantly increasing. Sometimes we may feel discouraged, but the fight is a good one, and I have infinite faith in the future. We not only know more about consumption, but we are applying what we know more sanely and searchingly."

**Beta-Naphthol in Milk.**—The New York Board of Health is closely examining samples of milk suspected of containing a new preservative which has been said to cause much illness. The drug is beta-naphthol, a coal tar product, according to the *Times*. Our Health Board says: "They are a little afraid of our rigid examinations here in New York. Nearly all of these adulterations which are tried outside fail to come here. We do have adulterations here, too, of course, but they are not so plentiful as elsewhere. We are constantly endeavoring to keep down the death rate of infants in the Summer, but our observation teaches us that more deaths are caused from a lack of cleanliness than from adulterations."

**Receptions to Sir Felix Semon.**—Sir Felix Semon, D.V.O., physician extraordinary to the King, who is to deliver the address on Laryngology at the St. Louis Congress of Arts and Sciences, will arrive at New York early in September. He will be the guest while in New York of his life-long friend, Prof. George M. Lefferts, and also of Dr. Emil Mayer, who is associated with Dr. Lefferts as co-editor of the *Internationales Centralblatt für Laryngologie*, and of which Sir Felix has been editor-in-chief since its beginning twenty years ago. The American tour, which has been arranged by Dr. Mayer, will consist of a visit to Niagara Falls, thence to Chicago, where

Prof. E. Fletcher Ingals and the Western Laryngologists will entertain both Sir Felix and Lady Semon, who accompanies him. At St. Louis the address is to be delivered, for which purpose he was specially invited. During his stay there, Dr. M. A. Goldstein, editor of the *Laryngoscope*, will be his chief entertainer, assisted by his fellow Laryngologists. Sir Felix and Lady Semon then travel to Washington, where Dr. J. H. Bryan will see to their comfort. Philadelphia is the next stop, where Lady Semon has relatives. At Montreal, where the travelers will be the guests of Dr. and Mrs. H. S. Birkett, Sir Felix will take a four weeks' hunting trip, as the guest of Sir Thomas Shaughnessy and the Canadian Pacific Railway, returning to New York City October 31, to remain a week before sailing for home. This last week is apt to be a busy one for them, as the program consists of a dinner under the auspices of the Laryngological Section of the New York Academy of Medicine, an address on Malignant Diseases of the Larynx at Hosack Hall, by invitation of the same section, functions on different evenings to both by Dr. Lefferts, Dr. Emil Mayer and Dr. Thomas R. French of Brooklyn.

**The Lying-in Hospital.**—During the month of July the Lying-in Hospital has had 556 applicants for treatment, of whom only 181 could be admitted and cared for in the hospital. The number of children born in the hospital during July was 137. For the same period in the outdoor department 334 persons applied for assistance at their own homes and 278 were treated in confinement. The number of medical visits made was 1,304. Through the Ladies' Auxiliary 1,726 garments were distributed and 232 patients supplied with care-takers. The auxiliary also gave coal and other articles and made 1,287 visits to assist and aid. The Diet Kitchen distributed tea, coffee, bread, sugar, oatmeal and milk. The work of the Lying-in Hospital is increasing rapidly, but the number of patients received is still limited to one-third of its actual capacity, owing to lack of means to open additional wards. As large a number of students as can be admitted are now receiving training in obstetrics, and some 50 nurses.

**Typhoid Epidemic Near Jerome Park Reservoir.**—The authorities of the Health Department admitted yesterday that there was an epidemic of typhoid fever in the Bedford Park section of the Bronx, and that the condition of affairs there was becoming alarming. Forty-two cases of typhoid were discovered in one block alone, and so far as could be learned last night nearly all of the persons afflicted with the disease were stricken after drinking water from a spring which empties into the uncompleted Jerome Park reservoir. This reservoir was soon to be put into use as a storage reservoir for the water supply of the Borough of Manhattan, but at present it contains no Croton water, and there is no danger of the epidemic spreading to Manhattan. The disease is now confined to a district which practically abuts upon the new reservoir at Jerome Avenue and One Hundred and Eighty-fourth Street, where the contractors engaged in completing the reservoir are at work blasting rock. Dr. Charles T. Roberts, the Sanitary Superintendent of the Health Department, and his assistant, Dr. Charles F. Spencer, accompanied by several other physicians, went to the typhoid district yesterday and made a thorough investigation of the conditions. They learned that all of those who are now suffering from the disease had partaken of water from a near-by spring which forms a creek running through the new reservoir. Samples of the water from this creek, from

the spring directly, and portions of the muddy soil there were carried away by the Health Department officials for analysis.

## PHILADELPHIA.

**New State Journal.—Sanitation**, a monthly journal of hygiene and sanitary science, has begun publication, No. 1, Vol. I, being issued in July. It is to be the official bulletin of the State Board of Health of Pennsylvania and of the Associated Health authorities of Pennsylvania.

**Report of School Inspection.**—During April, May and June, the months first devoted to the inspection of public schools, 155,707 children were examined and 6,936 excluded because of disease. The eyes of 5,150 were found to be affected, 1,807 being obliged to wear glasses. The work of the new corps of inspectors has been entirely satisfactory to the Health Department and the Board of Education. The health of pupils is noticeably improved as a result of inspection.

**To Enforce Vaccination.**—The fifty medical inspectors of the city are making a house-to-house canvass to vaccinate all people. The names and addresses of those who refuse, together with their employer and physician, are registered at the department. In each case the physician and employer are notified of the refusal. The employers are notified that every store, mill, manufactory, hotel or church in which a case of smallpox is found will be closed for fumigation.

**To Stop Assaults.**—The Bucks County Medical Society, at their meeting of August 3, discussed at length the subject of assault upon women which are of late becoming so frequent. The sentiment of the society was shown by the unanimous adoption of resolutions asserting the necessity of the most drastic punishment in the case of men convicted of criminal assault and endorsing the bill drawn by Senator Grimm providing castration as the punishment of such offense.

**Sanitary Rules Changed.**—The Department of Health and Charities will on September 1 put in force new rules governing house drainage, ventilation and cesspools. Plumbers must register annually and place a sign to that effect before their place of business. Outside closets flushed directly from the water supply pipes are to be done away with. Wooden bath tubs are also prohibited.

## CHICAGO.

**Hospital Accommodation Given by Sanitarium.**—The Sisters of St. Anne have completely isolated one wing of their sanitarium for consumptives at Forty-ninth and Thomas streets. They have fitted up operating and dressing rooms and are now taking general medical and surgical cases. The hospital building was erected only a few months ago, and is equipped with all modern appliances.

**Illinois State Board of Health Report on Drainage Canal.**—The Illinois State Board of Health, in a recent report, summarizes the results of the investigations made by the board to determine the sanitary effect of the new flow southward from Lake Michigan. That the waters of the canal in no wise contaminate the water supply of towns along the Illinois and Mississippi rivers is not only the firm conviction of the Board of Health, but it also is its opinion that the waters of those streams are actually benefited by the added flow coming down from Chicago. Mingling of the canal waters with



those of the Missouri, from which St. Louis draws her supply, would furnish an improvement which could not well help pleasing the consumers of the river towns, in the belief of the board.

**Summary of Report.**—The conclusions reached by the health officials in their long search into this question are summarized thus: That the water of the Des Plaines and the Illinois rivers is purer and better since the opening of the canal on account of the large amounts of pure lake water coming through the canal and diluting the sewage in these streams. That the water of the drainage canal in its present condition probably is purer and better than the water of the Illinois river at low stage. That a great part of the contamination of the Illinois river comes from the drainage from farms and villages and the sewage from cities and refuse from manufacturing industries along its shores, and that the water of the drainage canal actually improves these waters by the dilution of this original contamination. That the water of the Illinois river above its mouth is purer and freer from contamination than is the water of the Mississippi river into which it flows. That the water of the Missouri river above its mouth shows evidence of more serious sewage contamination than does the water of the Illinois river above its mouth, and that the Missouri river water, instead of being contaminated by the water of the Illinois river, with its burden of Chicago sewage, actually would be improved by it. That farm, village and city drainage is a serious source of contamination to streams, and that the Missouri river drains a larger area than the Illinois river, and, further, is badly contaminated by the animal refuse from the packing industries of Kansas City and Omaha. That the city of St. Louis takes its water from a point on the west side of the Mississippi, but a short distance below the mouth of the Missouri, and that the great bulk of the St. Louis supply is taken from the Missouri river water.

**Illinois Pure Food Law.**—It is a tribute to the advancement in knowledge of dietetics to have pure food laws on the statute books of the State, but unless they are enforced they afford little or no protection to the people. State Commissioner Jones of Illinois has been annually vigorous in prosecuting manufacturers of food products, and it is said that already suits have been brought against two hundred dealers and manufacturers for alleged violations of the pure food law. Many of the suits charge false labeling, while the bulk of them allege adulterations of the most injurious character. Among the adulterations found are "process butter," impure maple syrup and spurious vinegar. The belief is prevalent that Illinois affords a rich picking for dealers in and manufacturers of food frauds. That this belief is well founded there can be no doubt, from the fact that one hundred of these suits are against Chicago and Cook county dealers, showing that the metropolis, with its two million consumers, offers a market for food adulteration and misbranded food products so large as to defy the efforts of the most watchful and energetic food commissioner and food inspectors.

**New Buildings at Dunning.**—Four of the buildings authorized by the people of Cook county, when they approved the recent bond issue of \$500,000, have been completed. They are the Home for the Cure of Tuberculosis, which has taken the place of the old consumptive hospital, and three cottages for the treatment of insane persons. The Home for the

Cure of Tuberculosis was built after a careful investigation along the newest lines for the treatment of the disease. It has grown to such large proportions, especially in congested districts of large cities, that it has become a matter of the greatest importance to meet it, and, as far as possible, suppress it. This is being done; first, by systematic education in the houses of the poor; secondly, by a separation of the moribund cases from the hopeful cases, and, thirdly, by what is known as the outdoor treatment for cases that are hopeful.

**Cottages for the Insane.**—The cottages for the insane represent the newest type of hospital treatment. They are large, sunny and airy, and are without the prison-like bars on the outside of the windows. The living rooms are separate from the dormitories, and in all respects the cottages look like and are conducted much like private residences. These three cottages are connected by an ornamental colonnade. They are of pleasing architecture, and they make an ornate head for the avenue of cottages at the Dunning institutions.

**Employment of the Insane.**—In addition to the three new cottages, the large farm cottage is now nearing completion. This is designed for patients who are able to work on the farms. It is supplied with all modern facilities, including shower baths, and is really a part of the new treatment for the insane people, which provides moderate employment for them instead of forcing them to remain idle.

**Laboratory Building Under Erection.**—Still another building at Dunning is now under erection, the foundation already being in, to provide adequate morgue facilities and room for the pathological laboratory and for clinical lectures. The lectures will be conducted in an amphitheater. The facilities afforded in this building will attract students of medicine and will also cause experts in various diseases treated there to visit the institutions to lecture to doctors, internes and attendants, and in that way improve the medical service to the poor.

**Children's Building.**—Work has begun on the Children's Building at the County Hospital. This will be a large, roomy, fireproof structure, built on the most modern lines for the treatment of sick children.

**New Ophthalmological Journal.**—*Ophthalmology* is the name of a new quarterly journal, the initial number of which will appear October 1, 1904. As the title indicates, it will be an ophthalmic periodical of about 250 pages, devoting about one-third of each issue to original essays, the balance to abstracts of original articles appearing in domestic and foreign literature, also complete book reviews. The following well-known ophthalmologists and editors are in charge of the various departments: Dr. H. V. Wurdemann, Milwaukee, managing editor and publisher; Dr. Nelson M. Black, Milwaukee, assistant editor; Dr. Charles H. May, New York City, American and English literature; Dr. Casey A. Wood, Chicago, Italian literature; Dr. Charles A. Oliver, Philadelphia, and Dr. Blencowe E. Fryer, Kansas City, French literature; Dr. Albert B. Hale, Chicago, Spanish and Portuguese literature; Dr. Edmond E. Blaauw, Buffalo, Dutch literature; Dr. Charles Zimmermann, Milwaukee, and Dr. William Zentmayer, Philadelphia, German literature; Dr. J. Guttman, New York City, Hungarian and Austrian literature; Dr. Frank Allport, Chicago, British colonial literature; Prof. Dr. M. Wicherikewica, Cracow, Austria, Polish, Russian and Scandinavian literature; Dr. Mitsiyasu Inouye, Tokio, Japan, Japanese and

Asiatic literature; Dr. Claud Worth, F. R. C. S., London, Eng., English literature.

**War on Consumption.**—The secretary of the Illinois State Board of Health, Dr. J. A. Egan, has just issued a circular on "The Cause and Prevention of Consumption." The circular is written for the layman, not for the medical man, and it is designed as a plain and practical talk to the consumptive on how he may regain his health and how he may prevent conveying the disease to others; to the healthful man on how he may avoid acquiring the disease himself and how he may appreciate the physical conditions which indicate the threatened invasion of the disease; to members of families of consumptives, advising them as to how they may properly care for consumptives with little danger to themselves and how they may safely continue to live in houses in which consumptives have lived or died, or even sojourned.

No better excuse for this circular need be given than the statement that in 1903 over 7,000 people died from this one disease in Illinois, more than died from typhoid fever, diphtheria, scarlet fever, all forms of bronchitis, influenza, whooping cough, measles and small-pox combined, and that of all these deaths consumption is the one great enemy of the man in the prime of life, killing, without respect to manner of life or social condition, at the age when man is of the most value to his family and to the State. Of the 7,000 dead from consumption in 1903 in Illinois 4,500 died between the ages of twenty and fifty years. In the prevention of consumption the circular especially points out the fact that the spitting of consumptives is the chief source of infection and it urges strongly that healthful persons should not spit in public places or on floors and that they should not permit others to do so. Other important advice in the matter of prevention is: "Don't wear skirts which sweep the infection of consumption from the sidewalks into your homes. Don't put in your mouth things that are promiscuously handled by others. Don't fail to wash your hands before you eat. Don't drink from a glass, cup or vessel used by others unless it is carefully washed. Don't live, sleep or work in a room where there is no fresh air. Don't neglect a cough or cold." Such circulars are useful and might be distributed widely by other State health boards to advantage in the now well-recognized state of "War against Tuberculosis."

#### GENERAL

**Physicians in Cuba.**—Physicians are scarce in Cuba; \$316,000 worth of patent medicines were imported during the fiscal year 1902-1903, mostly from France.

**Five Millions for Hospitals.**—What Londoners spend annually on doctors will probably never be known. But the report annually issued by the Metropolitan Asylums Board shows that they expend more than a million a year on the public treatment of imbeciles, the infectious sick and the incidental establishment charges. Moreover, the sum, like the population, is annually increasing. Last year it was £1,123,130 (equal to a rate of 6.65d. in the pound), in 1902 it was £1,013,120, or a rate of 6.08d.

**New Hospital for Orange.**—Bishop O'Connor has authorized the Rev. F. Victor Romanelli, rector of the Italian Catholic Church of Our Lady of Mount Carmel, to open a hospital for patients "irrespective of race, religion or color." The institution will be under the care of the Sisters of the Most Precious Blood, and will be known as Mount Carmel Hospital.

#### Rocky Mountain Interstate Medical Association.

The next regular meeting will be held at Brown Palace Hotel, Denver, Col., September 6 and 7, 1904. The following preliminary program is announced: W. W. Grant, Denver, Complications and Sequelae of Appendicitis; S. C. Baldwin, Salt Lake, Hip Joint Disease; John C. Munro, Boston, Report of Cases of Operation Upon the Lung; D. S. Fairchild, Des Moines, Pregnancy Complicated by Tumors of the Uterus; Charles H. Mayo, Rochester, Minn., Peritoneal Tuberculosis; James R. Arneill, Denver, "Hyperchlorhydria," A Common Expression of Neurasthenia and Allied Conditions; J. N. Hall, Denver, Report of Eight Cases of Pernicious Anemia; A. C. Ewing, Salt Lake, Typhoid Fever; George H. Stover, Denver, X-Ray Treatment of Urethral Carbuncle; A. A. Kerr, Salt Lake, Ectopic Pregnancy; George C. Stemen, Denver, Shock; Edward C. Hill, Denver, The Chemistry of Drug Action. One and one-fifth fare for the round trip in Colorado has been obtained and proportionate concessions for outside States are expected.

**National Jewish Hospital for Consumptives.**—The National Jewish Hospital for Consumptives, in Colorado, has just completed another fiscal year, during which it cared for 105 patients of all creeds and from every section of the Union. Since its establishment in 1900 it has cared for 554 consumptives, the larger percentage of whom left the institution either cured or much improved. At present the facilities of the hospital are taxed to their utmost, and there is need for an enlargement of the institution, which is free to patients.

**Japanese Surgeons and the War.**—An interesting article appears in the *Deutsche Medicinische Wochenschrift*, which is abstracted by the *Evening Post*. The author is Dr. Wada, a surgeon in the Japanese navy and chief medical officer of the Red Cross Hospital at Chemulpo, in Korea; his patients were Russian sailors wounded in the naval battle of Chemulpo, where the Koriets and the Variag were destroyed. Of the Russian crew 100 were wounded, the majority being taken on board the French cruiser Pascal and the others on board British and Italian men-of-war. The wounded Russians at first declined to leave the French ship, but eventually twenty-four of them were taken ashore. They told the Japanese surgeons that the hospital arrangements on board the Russian ships were very defective, and that there were only five hospital beds for a crew consisting of 26 officers and 556 men. The Russian medical officers, they declared, were so perplexed by the suddenness of the action that they could scarcely attend to the wounded, and the chaplain was intoxicated during the battle. Moreover, the conditions experienced on board the French vessel were not of the best, the patients being placed in a small, damp room and supplied with inadequate food. The condition of the sufferers confirmed this account, for some of their wounds were gangrenous. Dr. Wada says that the Japanese shells exploded when they touched water or the human body and burst into 1,000 small pieces without evolving noxious gases. In most cases the fragments of shell had been removed by the French medical officers, but there were a few patients from whom Dr. Wada withdrew pieces of iron of the size of a small finger. The wounds were nearly all complicated by fractures of the bones, but there was only one instance in which a fragment of shell was found in a bone. The Japanese showed more courage than the Russians.

**Medical Training in Japan.**—Among the students at Roanoke College, Virginia, in 1889-90 was Hidel Fukuoka, a son of Viscount Takachika Fukuoka, a member of the Imperial Privy Council of Japan and ex-Minister of State for Education, writes a correspondent to the *Evening Post*. One day this young man handed me a copy of the English edition of the catalogue of the Imperial University of Japan at Tokio for the session of 1887-88. I examined this catalogue with a great deal of interest. I observed that in each of the six faculties of the university there were professors, native and foreign, who had won the degree of doctor of philosophy from the leading universities of Europe and America. I was especially struck with the advanced character of the College of Medicine, which had a required course of four years of ten months each, when at that time I believe no medical school in our country required more than three years for graduation. After completing the required course of four years, candidates for the degree of doctor of medicine are required to spend some months of the following session at the university to take their examinations. This ordeal covers in all twenty-five days, the examinations being conducted by a committee of the medical faculty. Each candidate is required to diagnose and treat from day to day several cases in the various hospitals of the university. With such thorough and practical training as that, is it any wonder that the field hospitals of the Japanese were highly successful during their war with China? The experience gained then has enabled the Japanese surgeons to make their hospitals even more efficient during the present conflict with Russia.

**English Public Houses and Tuberculosis.**—The London *Lancet* speaks authoritatively on this subject as follows: "That the public house is a fruitful source of infection by the tubercle bacillus is well known, and the returns of the English registrar-general show that public house servants are specially prone to be affected by pulmonary tuberculosis. This is not to be wondered at when one considers that the floor of the lower class of public house is covered with sawdust which in great measure is impregnated with sputum. This dust dries and is constantly being stirred up by the feet of drinkers. Not only are barmen and barmaids and the customers of the house thus exposed to infection, but the unhappy children who are brought into the house by their mothers are likewise in danger. The public house is the poor woman's club where she can discuss with her neighbors social and domestic incidents; the children cannot be left at home, and so they sit on the public house floor during their mothers' gossip time. Only the other day, passing a large public house in one of the main thoroughfares of St. Luke's, we noticed through the open door of a public bar several slatternly women drinking at the counter, while crawling on the floor of the bar and rubbing their hands in the sawdust with which it was strewn were two babies of from eighteen to twenty-four months old. That this is not an uncommon occurrence those who have occasion to visit poor and squalid neighborhoods well know, and in the light of such facts is it to be wondered that the race is said to be degenerating or that medical science should have such a hard uphill fight with disease? Granting that these children, probably the offspring of degenerate beings, become infected with the bacillus of tubercle, the environ-

ment in which they live will necessarily be a potent factor in the development of pulmonary tuberculosis, and not only will they themselves suffer, but they will also involve the public in great expense for their subsequent treatment and keep. Recently a law has been passed to prevent children under a certain age from obtaining intoxicants, and there is legislation for the prevention of cruelty to children, but as yet there is no law to prevent ignorant mothers from leaving their offspring to play on the disease-laden floor of a public house. Efforts are being made to inculcate the precepts of hygiene at an early age, and many publicans, notably those in the borough of Woolwich, post up notices requesting their customers not to spit. But until spitting on the floor of a tavern is made a penal offence, as it is at present to spit in a tramcar, there is but little hope of amelioration."

#### OBITUARY.

Dr. F. F. CASSADAY, senior practising physician in Frankford, died August 3 of apoplexy. He was stricken the day before while alighting from his carriage. Dr. Cassaday was born in Philadelphia and graduated from Jefferson College in 1867.

Dr. ROBERT MILBANK, sixty-six years of age, a well-known practising physician of 154 West Forty-eighth street, New York, died suddenly on Thursday night of apoplexy. Dr. Milbank was a member of the County Medical Society, the Academy of Medicine, the Society of the Alumni of Bellevue Hospital, the Medico-Legal Society, the Northwestern Medical and Surgical Society and was lately a visiting physician to the New York Infant Asylum.

Dr. ORLANDO BROWN, brevetted brigadier-general for services in the Civil War, and for many years one of the foremost physicians of Litchfield county, Conn., is dead at his home residence in Washington, Conn., aged seventy-seven years. He had been ill several months. Dr. Brown was a graduate of the University of New York and the Yale Medical School. His military career, which was distinguished, began in 1861, when he entered the army as assistant surgeon of the Eighteenth Massachusetts Volunteers. Later he became inspector of hospitals and superintendent of the general hospital at Newport News, Va. He was in charge of the welfare of the colored people south of the James river in 1863, and in 1865 was made colonel of the Twenty-fourth Regiment, United States colored troops. In 1866 he was brevetted a brigadier-general for gallant conduct in the service, but resigned his commission in 1869, and resumed the practice of medicine in this place.

SIR WILLIAM MITCHELL BANKS, the well-known surgeon, is dead. He was a Scotchman by birth, but the greater part of his life was spent in Liverpool, and his most notable work was the resuscitation of the Medical School of that city and the foundation of the University College there. He was one of the leaders of the present movement which has for its object the discovery of a cure for cancer. Born at Edinburgh in 1842, Sir William took his M.D. degree at the University of Edinburgh. After acting as Demonstrator of Anatomy at the University of Glasgow he removed to Liverpool in 1866. In 1897, when the British Medical Association visited Montreal, Sir William was president of the Surgical Section, and delivered the address on surgery. He was a Fellow of the Royal College of Surgeons and was knighted in 1899.



## SOCIETY PROCEEDINGS.

BRITISH MEDICAL ASSOCIATION.<sup>1</sup>

Seventy-second Annual Meeting, held at Oxford, England, July 26, 27, 28 and 29, 1904.

FIRST DAY—Continued.

(Continued from Page 385.)

**Cerebral Infection.**—This was the general topic of the Address in Surgery, by Sir William Macewen, F.R.S., Regius Professor of Surgery in the University of Glasgow. The first point taken up referred to the localization of brain abscess. Prior to the advent of cerebral spinal surgery in its later development, abscess of the brain was regarded solely as of a pyemic nature, occurring by metastasis, and, owing to the aberrant manner in which abscess formed, its localization was regarded as impossible, except in the few instances where abscess happened to occur in parts which gave rise to functional manifestations. Such was the old view, but early observation showed that this view was untenable. It was seen that all brain abscesses arising from the foci within the cranium were, if not in direct contact with such foci, at least in contact with the infected path which lay between the primary focus and the abscess. If the cerebral abscess remains unrelieved and continues to grow, it may by extension implicate other regions of the brain distant from the primary external focus, even then the contiguity of diseased structure is generally traceable. So that, by way of illustration, if one takes intracranial abscess resulting from ear disease, one knows that such abscess will form within a limited area of the middle ear, the particular direction of the extension being determined by the anatomical condition of the parts and the direction of the prior pathological encroachments. The abscess will be found either within the temporo-sphenoidal lobe contiguous with the infected tissue round the sigmoid sinus or in the cerebrum in touch with the infected path from the tegmen antri or tympani, the pathological processes having generally prepared the way and having left in most instances an easily traceable path. This being correct, it must be apparent in a case of abscess of the brain that preliminary investigation is facilitated and the treatment simplified as access to the abscess in either position may be had by extension of the aperture already made in the mastoid.

**Abscess versus Meningitis.**—Anatomical features are often secondary determining factors between abscess and meningitis, and in the latter case between localized and generalized lesions. If the access of the pyogenic organisms has been by way of the tegmen or the sigmoid, abscess of the brain or cerebellum is frequent; and if meningitis results, it is at least primarily localized, often the result of a soldering process, does not immediately involve vital structures, and is often amenable to prompt treatment.

**Abscess Does Not Occur by Pyogenic Organisms Traveling by Way of Internal Auditory Meatus.**—If, on the other hand, the pyogenic organisms have traveled by way of the internal auditory meatus, they occasion leptomeningitis of a serious kind on account of its being basal, early involving the medulla and respiratory centers; and, secondly, on account of its inaccessibility. Abscess of the brain seldom or never occurs by pyogenic organisms traveling by way of the internal auditory meatus. His own personal observation had never shown a single instance of such an occurrence,

<sup>1</sup> From advance sheets of the *British Medical Journal*, by courtesy of the editors.

nor would it be likely to occur from the anatomical features of the parts. The brain is kept apart from the original pyogenic focus by the whole length of the internal auditory canal, while the expansion of the brain membranes which ensheath the nerves in the canal dip right into it. The leptomeningitis is thus set up in the canal, and from there spreads over the basal membranes. Collections of purulent matter are frequently in the meshes of the pia and arachnoid, and occasionally they produce a softening and ulceration of the brain surface, but not abscess of the brain.

Patients affected with tubercle of the middle ear, with rupture of the membrana tympani, are subject to secondary pyogenic invasion, which runs a rapid course, the pyogenic organisms finding abundant pabulum for their development.

**Miliary Tuberculosis from Middle Ear Through Sigmoid Sinus.**—Another mode by which tubercle of the mastoid may become a menace to life is by dissemination through the sigmoid sinus to other parts of the body. On many occasions, tuberculous masses of granulation tissue issuing from the mastoid have surrounded the knee of the sigmoid sinus and in a number of the lumen of the sinus has been invaded by the tuberculous granulation tissue.

**Reflexes.**—The author then spoke of the influence of anesthetics on the reflexes and the persistence of many of the genital reflexes, even under the influence of profound anesthesia.

**Cauda Equina Lesions.**—Operations were performed in two cases which came under observation of lesion in the lumbar region implicating the cauda equina. Both were affected with pudic paralysis, and in one the anesthetic area extended to the back of the thighs and the soles of the feet, showing the further implication of the second and third sacral nerves. These operations resulted in the restoration of function of the bladder and rectum in both, and of sexual power in one and partial restoration of it in the second. One of the cases was of injury of two months' duration, while the other was of six months, and in the latter the spinal canal was found partly filled with a fibrous tissue mass in which the cords of the cauda equina were adherent on their posterior aspects.

**The Voice and the Pudic Nerves.**—In two cases where the pudic nerve was affected, among the minor defects attending their condition the patients asserted that their voice had altered since their injury. There was no available means of testing the accuracy of this statement, though one of the patients operated on remarked, some time after the restoration of the pudic functions, that his voice had regained its original "fullness." Doubtless the restoration of the bodily tone and vigor would have an effect upon the voice apart from any direct nervous influence through the vagus to the laryngeals. The assertion on the part of the patients, however, awakens the thought of the possibility. The effect of early castration is well known to produce an imperfectly-developed larynx and a high-pitched voice. But the spermatic plexus is totally different in origin from the pudic, being derived from the sympathetic through the aortic and renal plexus. It is possible that, among the fundamental changes induced by castration, the one affecting the larynx may pass through the pudic nervous mechanism, which must also suffer from the want of development?

**Suture Materials.**—He then took up the subject of suture materials. The aim in choice of a ligature should be to obtain one which would accomplish the first two objects—namely, to produce a solution of continuity of the internal coat of the vessel and to main-

tain the parts in apposition for a time sufficient to enable the living tissues to accomplish the organic union of the vessel wall; and thirdly, having accomplished these two former objects, to permit itself to be speedily removed from the tissues without disturbance, its place being taken by a new formation of living connective tissue which would further strengthen the occlusion of the vessel at the part ligated. Asepticity is by many considered the sole requirement in a ligature, otherwise mechanically suitable, but asepticity is only one of the requirements. A further requirement which a ligature ought to possess, is that it will remain in the tissues for a time sufficient to effect its purpose, and which will then be capable of rapid elimination. The same desiderata are required for sutures. A material capable of maintaining the tissues in contact, sufficiently strong to enable the tissues to proliferate and to effect a living union of the parts is required, and after this has been accomplished this suture material ought to become eliminated without disturbance of the parts. So that when the mission of the suture has been accomplished, it should no longer remain in the tissues, a useless dead material capable of producing irritation, but should permit itself to be speedily removed.

Some conceive the idea that it would be good to have a material by the aid of which the parts could not only be brought together, but one which would maintain them in permanent apposition. Such physical union is readily produced between two inorganic substances, such as two plates of metal, but it cannot be obtained between two pieces of living tissue. Living tissue can only be made to adhere permanently by a living bond of union. A suture of dead tissue can only secure coaptation of two living surfaces for a limited period—a period sufficient, in the majority of instances, to enable the living tissues to become united. When such union fails to be produced from any reason the living tissue gives way by absorption in front of the pressure exerted by the dead suture. This absorption goes on until there is no more traction by the suture—until a position of rest is obtained when the suture lies loose in the tissues. When this stage has been reached the dead suture is of no further service—it remains at best a useless foreign body, which, if encapsulated, may be innocuous; but its presence among tissues subject to movement is often a source of irritation, and sometimes of danger, to the neighboring parts (as in hernia). It is sometimes extruded from the tissues by a process of molecular disintegration occasionally associated with abscess formation. He deprecated the use of wire ligature material.

From the foregoing it must be evident that the material to be used for ligatures and sutures, besides being physically fitted to perform its function, requires to be rendered aseptic, and, further, requires to comply with a physiological test. First, it must remain intact in the tissues until its object be accomplished; and, secondly, after that has been attained, it must permit itself to be quickly removed by absorption. Sterilized silk is practically non-absorbable. It resists the action of the tissues for a very long period—years—and is frequently extruded. Silkworm-gut and hair are proof against absorption, and have been removed from the tissues five and seven years after their introduction, and were at the end of that period found to have preserved their smooth surface quite intact. Tendons of deer and kangaroo, though absorbable, resist the action of the tissues for many months. One knows how difficult it is to promote absorption of a sloughed tendon exposed in a wound. Long after the surrounding soft tissues are ready to unite, they are retarded from doing so by the presence of dead tendon. Catgut is one of the best

substances generally available for sutures and ligatures, but care ought to be exercised in choosing good material. For ligatures and sutures raw catgut ought to be selected, preference being given to such specimens as present the best physical properties and show that care has been bestowed on its manufacture. It must be evident that the subsequent preparation does not remedy physical defects originally in the gut, such as want of strength, or roughness. The gut must not be hardened in such a manner as to prevent leucocytic penetration, otherwise it will be too resistant, and in this way may be no better than silk or wire.

Dr. Macewen then discussed in detail some of the procedures in the preparation of various forms of catgut, and spoke of the causes of retardation of absorption.

(To be Continued.)

## NEW YORK ACADEMY OF MEDICINE.

### SECTION ON PEDIATRICS.

*Stated Meeting, held Thursday, April 7, 1904.*

The President, Andrew H. Smith, M. D., in the Chair.

The scientific business of the evening consisted of a symposium on methods of infection in tuberculosis, with special reference to children, and was held under the auspices of the section on pediatrics.

**Modes of Infection in Tuberculosis.**—Dr. Philip S. Sabine discussed the possible modes of infection and suggested that at certain ages particularly people were more susceptible and that infection seemed to occur more readily. For this reason, as pointed out by Dr. Jacobi, the tuberculin treatment had never been a success in children suffering from tuberculosis. Direct inoculation with tuberculosis Dr. Sabine considers not to be so rare as is sometimes thought. Genito-urinary infection with tubercle bacilli occurs directly through coitus and, in Dr. Senn's opinion, is not infrequent from this cause. The frequency with which tuberculous epididymitis occurs in the male, shows the danger to which the female is exposed from this cause. In butchers, anatomists and workers in laundries, direct contagion through wounds with tubercle bacilli is not infrequent. In four reported cases, skin tuberculosis has developed in tattoo marks. In three of these cases the tattooer was actively tuberculous and in the fourth case the person tattooed was so.

**Circumcision Tuberculosis.**—There are many cases of tuberculosis reported as occurring in the wound made for circumcision. The old rubrical method, according to which the bleeding was stopped by pressure with the lips, is undoubtedly the reason for the frequency of this form of tuberculosis. It is very evident then that the saliva of persons suffering from tuberculosis may constitute a source of skin tuberculosis, if it should be brought in contact with open wounds. Under almost corresponding circumstances a number of cases of tuberculosis have been reported as occurring in children in whom efforts at resuscitation were made by direct mouth to mouth inhalation. Other forms of direct inoculation of tubercle bacilli into the skin have been reported from wounds made by spittoons, and in four cases reported Czerny as the result of skin grafting. This form of inoculation is not, however, very frequent since of 160 workers, in an abattoir only seven had lesions of this kind. It seems very clear, however, that fingernail abrasions may cause tuberculosis of the nose. Adenoids seem to be especially liable to infection either from the finger or from instruments used in their removal. This seems to be due to a lack of resistive vitality on the part of the spongy material present.

**Diffusion from Sputum.**—There is no doubt

that bacilli are diffused into the air on minute particles of sputum during coughing, and even during talking. Experiments have been made which show that even during talking bacilli may be projected as far as a meter from the patient's mouth. Such diffusion does not occur when the sputum is thick, but only when it is rather thin and free. It only takes a few minutes to cause infection of a room. The bacilli thus projected into the air on expectorated material have been found in various experiments to be still some distance from the floor at the end of from fifteen minutes to three to five hours. During rapid talking sputum is more freely projected. Certain persons seem to project much more than others. While it is assumed that inhalation tuberculosis is a thing of very frequent occurrence, it is not easy to understand how tubercle bacilli can be breathed into the depths of the lungs on dust particles or little spherules of sputum material. Jonathan Wright, of New York, the distinguished laryngologist, insists that inspiration tuberculosis is practically impossible except where people are mouth breathers. Air is carried through the moist intricate passages of the nose and then must pass the narrow apertures between the true and the false vocal cords. These moist surfaces are almost sure to entangle any foreign particles that may be present. The air in the depths of the lungs is changed not by direct currents of air that flow in and out, but by diffusion in the trachea and larger bronchi, so that it is very hard to understand how tubercle bacilli should find their way into the air vesicles. If inspiration tuberculosis were so common as it is then infection would take place mainly at the bases of the lungs, since most of the tuberculous material would find its way downwards by means of gravity. Once dust particles get beyond the trachea, if they become entangled in mucus they are certainly not likely to find their way upward against the force of gravity into the apices of the lungs, where initial lesions of the pulmonary tuberculosis are most common, but would be almost sure to find their way downward at least as frequently, which is not the case in practice.

**Method of Infection.**—Dr. Rowland G. Freeman said that the method of infection in tuberculosis is, of course, extremely important. Considering how much study has been devoted to the disease, it might be thought that this problem would now be definitely settled. Professor Koch, however, considers that infection through the intestinal wall is very infrequent. Professor von Behring, on the other hand, considers that infection, even through a healthy intestinal wall, is not only possible, but the most frequent method. When two such great authorities differ, the question is evidently open for discussion. The bronchial glands are so often affected as to show the frequency with which infection must take place through inhalation. Whether infection may take place through food, or not, there is a diversity of opinion. In New York it is considered to happen very rarely. In Europe, both in England and on the Continent, a very different opinion prevails. Guthrie found over 22 per cent. of infections through the intestinal tract. Still reported over 23 per cent. Heller, of Kiel, reported nearly 40 per cent. of primary intestinal affections. This seems to be the prevailing German opinion. Conheim and Aufrecht consider that infection through the intestines is by no means rare, but rather frequent. Dr. Sims Woodhead has recently stated that the mesenteric glands are nearly always infected.

**Intestinal Permeability.**—It would seem from recent observations that in animals, at least, infection through the intestinal walls may take place in such a way as to give the principal lesions in the lungs. Lung lesions that occur as the result of infection through

the intestinal tract need not necessarily come from food. It may be the result of the swallowing of dust. Von Behring has shown that at least in young animals tubercle bacilli may pass through an uninjured intestinal membrane, producing lesions in the intestinal glands, or even at some distance from the intestinal tract. When there is generalized tuberculosis, the seat of infection seems nearly always to be the intestines.

**Tuberculosis and Emaciation.**—The nutrition of children suffering from tuberculosis is usually not very seriously disturbed. Emaciation always speaks against tuberculosis in young children, and rather for intestinal disturbances of other kinds. Very often the occurrence of tuberculous meningitis in children in whom nutrition is excellent. Tuberculosis acquired very young in life may become incapsulated and later take on renewed infectious qualities. This not uncommonly happens after some other infections, as for instance measles, especially measles complicated by bronchopneumonia or whooping-cough or grip. This form of reinfection may even cause a generalization of tuberculosis or may set up a fatal tuberculous meningitis. Infection of the cervical lymph nodes, or of the joints seldom occurs under three years of age. These infections of course must take place as a rule through the circulation, so that it would seem that the entrance of tubercle bacilli into the circulation is rare in the early years of life. Abdominal infections with tuberculosis occur most commonly during the period when cow's milk is an almost exclusive article of diet, and would seem to indicate that bovine tuberculosis is pathogenic also for man. Whatever may be the port of entry of the tubercle bacillus, the bronchial glands and the lungs soon become involved.

**Bovine and Human Tuberculosis.**—Dr. Maczyk Ravenel, of Philadelphia, discussed the relationship between human and bovine tuberculosis. He said that if this discussion had taken place shortly after Koch's announcement of the absolute diversity of human and bovine tuberculosis, he could only have asserted his belief of the contrary and confirmed it by citations from literature. Now, however, as the result of observation made since Koch's announcement, he is definitely sure that there is not the immunity of human beings to bovine tuberculosis that Koch claims. Koch's principal argument is that bovine tubercle bacilli are always extremely virulent to animals, while human bacilli are not so virulent. It has been shown in Germany, however, that true bovine bacilli may possess but slight virulence. Dr. Ravenel himself has succeeded in isolating bacilli from human beings, that had all the characteristics of human bacilli with their special virulence, in certain cases, though lacking it in others. It has been found that bacilli, especially if existing in fat droplets, may readily pass through the intestinal wall even though the mucous membrane is uninjured. Dr. Ravenel's observations in this matter were made upon dogs. The animals were first purged by means of castor oil, so as to leave no foreign material in the intestines. Then, after being allowed to fast for twelve hours, they were fed with butter, into which had been introduced tubercle bacilli from cattle. Four hours after their meal they were killed. In eight out of ten such cases, bacilli were found to have passed through the intestinal walls. These bacilli, when injected into guinea-pigs, killed them in a comparatively short time. This was evidence that a large number of the bacilli must have passed through since ordinarily the length of time necessary to kill an animal depends upon the number of bacilli that are originally injected. In these cases bacilli were found in the thoracic duct and in the lungs, and the observations proved that though the infection takes



place through the intestine, it may show itself very markedly in the lungs.

**Other Points of Entry.**—The tonsils are undoubtedly sometimes a port of entry for tubercle bacilli, and these may be derived from the food. Friedmann found that in tuberculous subjects the tonsils are infected quite commonly, if careful investigation of this subject is made at autopsy, and that many removed tonsils show the existence of foci of tuberculosis. These that are derived from the food may not infrequently be bovine tubercle bacilli and show the characteristic features of this germ. Where infections of the mesenteric glands alone were found in Dr. Ravenel's own experience, two out of five of the cases showed the presence of bacilli having such decided virulence that it could only be concluded that they were genuine bovine bacilli. De Schweinitz showed this same thing to be true in two out of four cases under his observation. Theobald Smith found this special virulence to be present in one out of five cases. Schmitt, in Germany, has recently reported his observations on 16 cases of mesenteric tuberculosis, in four of which the bacilli present seemed to be of bovine origin. It is even possible that affections of the bronchial glands may be due to bovine tubercle bacilli carried into the lungs after having been emptied first into the veins from the thoracic duct.

**Danger of Bovine Tuberculosis.**—Dr. Ravenel does not attempt to say how many cases of tuberculosis in children are due to bovine tubercle bacilli, but of their pathogenicity for man there can now be no doubt. Bovine bacilli occur not only in the milk of cows suffering from tuberculosis of the udder, but also in such as have tuberculous affections in other parts of the body. Ravenel himself has recently found that if the milk of five cows were mixed, one of them having been proven tuberculous, though not to a marked degree by the tuberculin test, such milk when injected into guinea-pigs gave 15 per cent. of positive results. This has been confirmed by German observers. From bovine tuberculosis then the human infections constitute not a small number, and children should be guarded against the use of such products.

**Heredity and House Infection.**—Dr. Biggs discussed the subject of susceptibility and heredity, and said that as tuberculosis usually occurs it is a question rather of house infection than of direct inheritance. It is possible that a specific susceptibility to the disease may be inherited. In a tuberculous family, however, a child is exposed to infection almost from the first moment of its existence. It is kissed and fondled by the members of the family and may be infected with the disease and sometimes even a tuberculous mother will pass some of the food from her own mouth into that of the child. The cooling of milk foods in this way is not uncommon. Later, when the child begins to creep its hands become soiled with expectorations on the floor and it gathers up the dust which frequently contains tuberculous germs. Besides this, owing to its position so close to the floor, it breathes in the dust that is raised up by every movement through the room, and thus is likely to inhale the germs of tuberculosis.

**Infection and Latent Tendency.**—If the child becomes infected it may later recover, the lesion being incapsulated. Whenever, later on in life, however, there is any running down in health, this incapsulated focus of tuberculosis may become active again. This may constitute the hereditary tendency that to some minds is supposed to exist so clearly, and modern research seems to point in this way. The most important thing for the decrease of tuberculosis is the protection of children in every way and the lessening of the

disease during the early years. Dr. Biggs then showed by statistics of the mortality from tuberculosis of New York city that there had been, in recent years, a very decided decrease from the death rate of tuberculosis under the age of fifteen years. This he considers the best feature of the crusade against tuberculosis and believes that it should be encouraged in every way. If there is to be an eradication of the disease it will come thus more surely than by any other means.

**Entrance by the Lungs.**—Dr. Thomas Darlington, of the New York Board of Health, opened the discussion of the papers. He considers that the entrance of bacilli by the lungs must be admitted. Notwithstanding the very complete protective mechanism of the lungs, dust and fine particles of various kinds find their way deep into the air spaces of the pulmonary tissue. While acting physician to the Croton tunnel work Dr. Darlington found at autopsies of men who died during the progress of the work, that dust of various kinds from the quarrying and the explosions had found its way into the farthest portions of the lungs. On the other hand, he considers that tuberculosis may certainly develop from food materials, and especially from milk. It is not an infrequent experience for a physician to note persistent diarrhea in a patient and then have phthisis develop, especially in young patients.

**Human and Bovine Tuberculosis.**—Dr. Darlington has seen cows that fed on pastures over which the tuberculous patients of a sanitarium were accustomed to walk without proper precaution as to expectoration develop tuberculosis apparently as the result of the swallowing of tuberculous material with the grass. Food material may also prove a source of tuberculous infection, or through carious teeth. It is from these ports of entry especially that cervical lymph node tuberculosis is apt to develop and may prove a medium of further infection.

**Care for Children.**—For the restoration of adults suffering from tuberculosis to health it has been suggested that removal to sanatoria may constitute the best means. If adults are to be sent away from an infected home and poor surroundings, so much the more necessary is it that children should be treated in this way. It is wonderful how rapidly children improve, though there are many little patients who suffer so much from homesickness that any improvement is out of the question. On the other hand, mothers are loath to let sick children go. Well children they are satisfied to part with. If they stay they are sure to be a source of infection for other members of the family, since an ailing child is more kissed and fondled than even a well one. The question of homesickness has never been properly realized as a factor in mortality statistics. Dr. Darlington has seen an epidemic of measles with 36 patients, 18 of which died, because, when ill, they felt the need to see familiar faces and called for them frequently. This was true even when the children came to a country home only from an institution in the city. They were homesick for their old surroundings, for the nurses with whom they had been brought up. For the sanitarium treatment of children then it will be necessary to have the institutions in close proximity to the city in order that parents may have the opportunity to visit frequently.

**Environment Not Heredity.**—Dr. Northrup said that scarcely too much importance could be given to the educational value of the work that is being done by the Board of Health. Not long since a woman applied to have her husband removed from the home to the hospital, because she feared that he would be a source of infection. In spite of all her warnings

he insisted on being careless with regard to expectoration and she wanted to avoid the danger for the children particularly. It seems to be becoming clearer that it is not a question of heredity, but entirely one of infection that is at the bottom of the development of tuberculosis. Dr. Northrup once saw tubercle bacilli demonstrated in the circulation of a fetus that had been cut from its mother who was dying from tuberculosis by Cæsarean section. It seemed not impossible, however, that they might have been milked into the child's circulation owing to manipulations during the operation. It is certainly a rare curiosity for children to be born with tuberculosis and the rôle of heredity is assuming ever smaller proportions.

**Intestinal and Respiratory Tuberculosis.**—Dr. Northrup considers that it is rather easy to overestimate the importance of intestinal tuberculosis and to underestimate that which has its rise through the respiratory tract. In children the examination of the bronchial glands and the determination of their condition seems to be the crucial test of the mode of entrance of tubercle bacilli. In Dr. Northrup's own experience of 125 autopsies, every one showed the bronchial glands affected, apparently as the result of primary pulmonary tuberculosis. Only one showed such an involvement of the mesenteric lymph glands as pointed to an infection through the intestinal tract. With regard to experimental observation, the conditions established for purposes of experiment were so different from those of nature as to make the conclusions unsuitable. If tuberculosis material is forced into an intestine it is not surprising if it finds its way through the mucous membrane into the mesenteric glands, or even the thoracic duct without producing other manifestations. This must not, however, be considered as evidence of the passage of tubercle bacilli through the intestinal mucous membrane.

**Tuberculosis of the Cervical Lymph Nodes.**—Dr. Dowd said that it is very probable that tuberculous infections take place, both through the intestinal and the respiratory tract, and that infections through the intestinal tract are more frequent than have been thought. It is interesting to realize, however, what little tendency tuberculosis has in certain forms of infection to spread beyond the original focus. Of 100 cases of tuberculosis of the cervical lymph nodes that Dr. Dowd has treated surgically only one has so far developed tuberculosis of the lungs. Other cervical lymph nodes have become infected and the infection has even spread to the other side of the neck, but the lungs have not become affected. Out of 1,000 surgical cases treated in hospital under Dr. Dowd's care, 212 were suffering from tuberculosis in some form. The overwhelming number of these cases were of bone tuberculosis. At present there is no knowledge of the source from which tuberculosis of bone originates. The infected material must, however, come through the circulation, though it is not frequent to find other lesions of tuberculosis in the same patient.

**Localized Tuberculous Infection.**—In ten cases under Dr. Dowd's care iliac and femoral glands were affected with tuberculous processes as the result of bacilli finding their way through the lymph passages from slow running ulcers of the feet. These ulcers started in traumata of various kinds, especially as were due to slivers of wood from old floors or portions of kindling wood and the like. Tubercle bacilli were demonstrated in all of the cases. Dr. Dowd considers it rather surprising to find that tubercle bacilli should be so common on the streets of New York that slivers of wood should be capable of bringing about an infection from this form of disease.

#### **Possible Infection Through Mucous Membrane.**

Dr. Samuel Hamill, of Philadelphia, said that recent observations have shown beyond all doubt the possibility of tuberculous infection through uninjured mucous membrane. Such a pathological event is not frequent, yet it is certain that it does occasionally occur. The other important fact brought out by recent observation is a sort of corollary of the first and shows that tuberculous lesions may be quite far removed from the original port of entry of the tubercle bacilli, and yet show very little signs of the course they have traveled in reaching the point at which they produce a lesion. Dr. Hamill said that there is no doubt now that tubercle bacilli may pass with the chyle through the intestinal wall into the lacteals, thence to the thoracic duct and finally into the superior vena cava, and from here the distance through the right heart to the lung is not far. While lesions of the thoracic duct have been found they are not frequent. Very few of those who make autopsies will be able to say definitely whether the thoracic duct was affected or not, since usually it escapes all notice, and it is only in recent years that this subject has been investigated. Lung infection from the intestines, however, without any intermediate lesions from the intestine, is not only possible, but seems actually to occur much more frequently than has been thought. With regard to general tuberculosis in infants, Dr. Hamill is of the opinion that these cases may be due to bovine tuberculosis, because of the special virulence which this form of the bacillus has for human beings and other animals.

**Infection from Cattle.**—Dr. John H. Girdner said that in his own observation cases of tuberculosis seem to develop for which the only source of infection that could possibly be blamed was tuberculous material from cattle. The cases occurred in a mountainous district where there was very little dust, and where for miles there were no sufferers from tuberculosis. Human infection could absolutely be excluded. The patients lived almost exclusively on dairy products and the cattle from which these came were the scrub mountain cattle, thin and scrawny, that had been inbred for many generations. The breed was degenerate and there were evidences of tuberculosis in some of them. Under such circumstances it seems very probable that there can be an actual transfer of the tuberculosis from the cattle to human beings. This may not be frequent, but it constitutes a source of danger that must constantly be guarded against and with regard to which Koch's announcement by his tendency to allay suspicion is likely to do much harm.

**Intestinal Infection.**—Dr. Ravenel, in closing the discussion, said, in answer to Dr. Northrup's objection that the animals in his experiments were injected directly into the bowels with large cultures of tubercle bacilli that this was never technic. In the cases that he had reported nothing contrary to the ordinary course of nature was permitted. The animals were compelled to fast for twenty-four hours, were given a purge to remove materials that might be present, and then were given a simple meal of fresh butter, which they ate with great avidity and digested rapidly; the fat droplets, however, in the course of absorption, carrying the tubercle bacilli through the intestinal walls.

**Chinese Made Easy.**—It may come as a surprise to many physicians, particularly of New York, that an accomplished Chinese scholar is in their midst. Fortunately Dr. Walter Brooks Brouner has tried to spread the knowledge gained by many years of hard work. We hope to soon present a review of his interesting book.

## NEW YORK ACADEMY OF MEDICINE.

## SECTION ON GENITO-URINARY DISEASES.

*Stated Meeting, held April 20, 1904.*

The President, James Pedersen, M.D., in the Chair.

**Anuria Due to Obstruction of Both Ureters by Calculi.**—Dr. A. V. Moschcowitz presented a man, forty-eight years old, who had been admitted to Mt. Sinai Hospital November 25, 1903. Five years before he had an attack of pain in the right side of the abdomen. Since then he had been in fairly good health except for repeated attacks of lumbago. On November 16, 1903, he complained of rather severe pain in the left side of the abdomen. Six days later he voided his urine voluntarily and then did not void any for three and a half days, or eighty-four hours. When he was admitted to the hospital, November 25, his bladder was found to be empty and there was a urinous odor about the patient. In view of the fact that there had been pain upon the left side and again upon the right side some time previous a diagnosis was made of complete anuria of calculous nature. The patient was in fair condition, so that a double nephrotomy was indicated and performed. The result of the operation verified the following: There were no calculi or foreign body in either kidney; the perineal fat on the left side was edematous; the left kidney contained cloudy urine; the right kidney contained pus and urine mixed; a bougie introduced into both ureters revealed an obstruction approximately  $6\frac{1}{2}$  or 7 inches from the skin incision down in the ureter. The kidneys were drained and the patient placed in bed. The next day the patient felt very comfortable and both kidneys secreted urine; in fact, the patient laid in a pool of urine in the bed. December 29 the condition of the patient was such that Dr. Moschcowitz thought of going further and relieve or cure the patient completely. At that time he bent a tube at an angle and introduced it into the pelvis of the kidney; through this tube a bougie was introduced into both ureters and then there was found an obstruction on the left side about seven inches from the skin incision and, on the right side, about six inches from the skin incision. The cystoscopic examination was very interesting. The bladder contained but very little fluid and this examination was quite difficult. The right ureter was seen as was the left. This examination revealed a white roundish body which was thought to be in the mouth of the ureter and was believed to be an impacted calculus in the left ureter. The skiagraph picture was not satisfactory. In view of the fact that there was believed to be something in the mouth of the left ureter, which the doctor took to be an impacted calculus, a suprapubic incision was made on January 4, and he was very much surprised not to find any. The incision then made was utilized for the introduction of a catheter into both ureters until they met with obstructions. Immediately he made an extraperitoneal incision upon the right side of the abdomen, exposing the ureter, which was found to be enlarged and thickened. Just above the linea arcuata a large stone was found obstructing the ureter; this was extracted and the incision in the ureter sutured with catgut and the opening in the abdomen closed by layer suture after introducing a cigarette drain. There was no shock following the operation. On the day following four and a half ounces of urine were voided. Two weeks later the same procedure was performed on the opposite side, the operative steps being practically the same. That is, the ureter was exposed, incised, and in this case the obstruction was found below the linea arcuata in the form of a calculus. It was with difficulty extracted, but by gentle massage it was pushed upward and withdrawn. The patient made

a complete recovery, and there was no leakage from either side. The second operation was performed on January 18, and the patient left the hospital on February 10. Both kidney incisions had healed kindly. Today he had a sinus which led down beneath the skin and no doubt will close very soon.

Dr. Joseph A. Blake said that he had found a very good way of stripping the stone along the ureter into the field of incision was to take a ringed sponge forceps and stroke the stone through the ureter toward the incision. In his hands this was better than using the finger, inasmuch as the ring caught and controlled the stone even through the wall of the ureter.

Dr. F. Tilden Brown said that the distention of the pelvis gave an indication of a longer or shorter retention of calculi. He asked if it would not have hastened the operative procedure which was finally made in the abdominal region if the ureter catheter had at once been passed up each ureter until it met with the point of obstruction or lodgment of the calculi? Then, without resorting to nephrotomy, to have made an ureteric incision and there removed the calculi. But the brilliant result in this unusual and critical case leaves no room for any criticism.

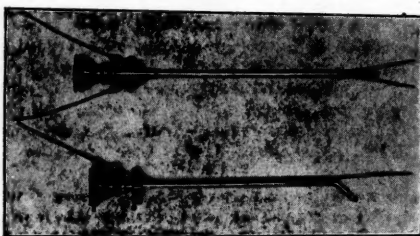
Dr. Moschcowitz was under the impression that five years ago when the patient had the severe attack of pain supposed to be due to appendicitis, it was due to the downward passage of the calculus and which, at that time, blocked the ureter. To him it was a great point of interest to know how such a kidney should act if it was assumed that its ureter had been blocked for five years. It had been suggested that at no time was the ureter completely blocked, at least until the additional strain was put upon it by the blocking up of the other side. From the gross appearance of the kidney he did not expect that the kidney would take up its function, although it apparently had. With regard to doing a ureterocystostomy at the primary operation he could not say that this would have been the better course to pursue. What then was needed was to relieve the kidney of its distention so that the kidney could functionate again. He said it was almost impossible to make an absolute diagnosis of calculus anuria, but were it possible it is best to meet primarily the vital indication, which in these cases is only a nephrotomy.

**Repair for Large Defect of Urethra.**—Dr. A. V. Moschcowitz also presented this patient. He had never had lues or gonorrhea. He was admitted to Mt. Sinai Hospital last spring when he gave the following history: About one year before his admission to the hospital he had a painful swelling in the perineum which was thought to be an abscess and was incised at some hospital in New York. Since then there had been dribbling of urine. One day before admission he was cystoscoped by a physician and sent into the hospital with a diagnosis of tumor of the bladder. He would have come anyway because shortly after he had a severe chill and rise of temperature. Upon admission to the hospital there was found an extensive phlegmon of the perineum and scrotum and a fistula which led to some part of the urinary tract. This abscess was incised in different directions, and, in spite of the septic condition, the patient made a good recovery, but the fistula remained. The patient was discharged, but readmitted September 14. Two days later the fistula was laid bare. From the previous abscess and the gangrenous loss of urethra there was found a defect which extended nearly to the rectum,  $3\frac{1}{2}$  inches in length. After the parts had been thoroughly cleansed the question arose how to repair this extensive defect. The epithelium had gradually grown toward the urethra on both sides; therefore



he dissected it up for three-quarters of an inch on either side, introduced a catheter through the urethra into the bladder, and united the cutaneous flaps over this catheter, uniting them in the median line. The catheter was left in for two weeks and then the wound was practically healed. The endoscope now showed a peculiar condition of affairs, as the urethra does not collapse at the end of the tube, but remains patulous for some distance beyond it. It was possible to pass a 30 Fr. sound with ease and comfort. The patient retains his urine well. The man is more or less morose because he has lost his power of copulation, which he believed was due to the extensive loss of muscle of the perineum and,

Fig. 1.

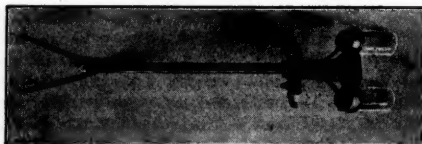


The upper illustration shows Brenner's single catheter cystoscope; the lower, Dr. F. Tilden Brown's first double catheter cystoscope.

in a greater measure, to the division of the nerves which supply those various muscles.

**Presentation of Some Cystoscopes Designed for Different Purposes.**—Dr. F. Tilden Brown exhibited these. He said he would esteem it a privilege to show these instruments before this particular section of the Academy of Medicine, and to hear the criticism of those who have used any of them. So far as he has been able to ascertain, his original double-barrelled ureter cystoscope, Fig. 1, B, was the first instrument of any kind which in both sexes catheterized the two ureters synchronously. This was but a modification of Brenner's single catheter cystoscope, Fig. 1, A, and in-

Fig. 2.

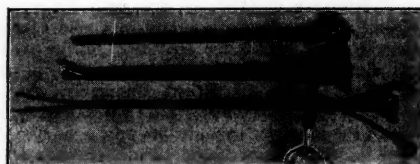


DR. F. TILDEN BROWN'S DOUBLE CATHETER AND TWO-WAY IRRIGATING CYSTOSCOPE.

involved no new principle in construction or of technic. In former publications<sup>1</sup> he has explained the nature of the limitations of the two instruments just referred to, as well as wherein requirements for something better led him, aided by Mr. Rheinholt Wappler, to gradually evolve and by continued clinical tests to perfect his present type of cystoscope, the aim of which was to assemble two irrigating channels, two catheter canals and a telescope all in a circumference of 24 Fr. The basic feature which made this feasible was a lamp-tipped open sheath needing an obturator to pass it to

the bladder, then the obturator was replaced by a telescopic tube, carrying two catheter canals. Thus by omission of the old time terminal window the essential space was gained, and a departure made from the antecedent types of cystoscopes. The change provided for several different ways of rapid bladder irrigation or change of distending medium, whether water or air. It also obviated the risk rather remotely inherent to other catheter cystoscopes of having the catheters or catheter canals catch up infectious material while passing through the urethra. This scheme as first developed in the catheterizing instrument, Fig. 2, was found to be practicable, and it was but a natural amplification of it to equip the same sheath with other interchangeable telescopic tubes having supplementary purposes, this set making up what was called the composite cystoscope, Fig. 3. As first made the telescopic tubes reached only to the convexity of the sheath and tip, it was later learned that the visual properties were greatly improved by having the telescopic tubes protrude into the bladder, so as to bring the terminal lens on a vertical plane not much behind that of the lamp, as shown in Fig. 4, when on account of this proximity of lens and lamp a brighter illumination was had than with previous forms of cystoscopes. When the catheterizing telescope is in use the matter of illumination is of particular moment because on the trigonum the mucous membrane is most apt to be congested and dark. In this region the projecting prow of the instrument serves an additional purpose, that of

Fig. 3.



DR. F. TILDEN BROWN'S COMPOSITE CYSTOSCOPE.

depressing a slight ridge of mucous membrane, which in some bladders tends more or less to intercept the horizon between the internal meatus and the ureter mouths. In addition to the advantages mentioned in having the terminal lens extended forward, it is just as important to have the underlying catheter canals terminate almost on a line with the lens, for two reasons: (1) That these canals may give sufficient support to the flexible catheters in order to overcome a muscular resistance occasionally met with at the ureter mouths or a trifle within; (2) that the catheter points when advanced may have no chance of plowing over this sensitive part of the bladder.

Dr. Follen Cabot said that, in his experience, the oval sheath was easier to introduce than the cylindrical one. Upon withdrawing the instrument the catheters could be left in place. He had held the catheters in place as long as fifteen minutes without getting much urine. Withdrawing the instrument in this way and leaving the catheters in would enable one to wait for hours, if need be, to get sufficient urine for examination purposes. The instrument he referred to was made without separate chambers for the catheters and had been used in over a hundred cases with perfect satisfaction. This ureter cystoscope could also be used for observation. It had been devised by the speaker somewhat along the lines of the Brenner and F. Tilden Brown instruments, and will be shown at the next meeting of the Academy (Genito-Urinary Section).

Dr. George K. Swinburne said that a point of advantage in Dr. Brown's instrument was that the instrument

<sup>1</sup> Annals of Surgery, Vol. XXX, p. 667; Annals of Surgery, Vol. XXXV, p. 642; Medical and Surgical Report of the Presbyterian Hospital, Vol. V, p. 670.

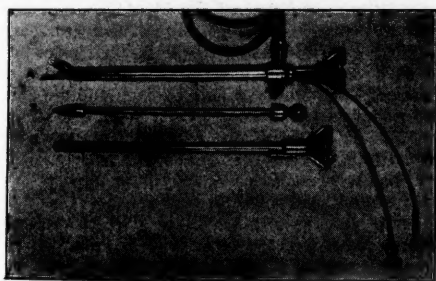
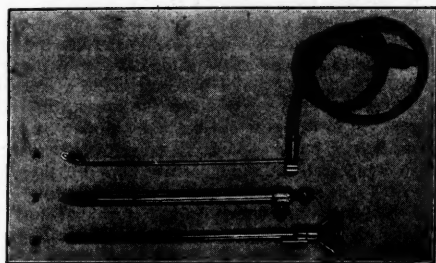
could be passed into the bladder and the bladder washed out through the tube and then the telescope inserted without withdrawing the instrument. This was an advantage possessed by no other instrument. Oftentimes the fluid within the bladder would become so muddy that one could not see and the possibility of washing out the bladder without withdrawing the instrument made it of additional value. One often could see something when the telescope was introduced which a moment later would not be apparent. Dr. Brown spoke of withdrawing the instrument into the neck of the bladder before inserting the telescope. He said he had been in the habit of simply raising the proximal ends so that the opening was on the bladder floor; thus the bladder contents were retained. He had noticed that when the opening got into the bladder neck, pushing it forward sometimes scraped the neck of the bladder and caused enough bleeding to make the cystoscopic examination

change of the telescopic tubes, although, as Dr. Cabot had stated, it was a feature of the instrument that such irrigation could be carried on with the telescopes in the sheath. Dr. Brown said that if there was any particular reason for keeping a catheter in the ureter for some length of time it was of course better to employ a long catheter and pass it nearly or quite to the renal pelvis, but he showed how easy it was to manage the withdrawal of the cystoscope so as to leave some short catheters in the ureters. For a number of reasons he was opposed to the plan of leaving a catheter in the ureter, as well as to the withdrawal of the cystoscope until the urine collection had been completed. It was in order to obviate this necessity which had led him to provide the extra inlet and exit channels so that the vesical distention could be relieved as soon as the catheters were in the ureters. The to and fro motion of the tip of a catheter in the ureter, which must take place more or less during removal of the cystoscope, was very apt to cause an exfoliation of the ureteric epithelium and some admixture of blood with the collected urine. It seemed scarcely necessary to point out the errors which might thus accrue from the presence of blood in one or both of the urine specimens when it did not properly belong there.

Dr. H. W. Van Allen, of Springfield, Mass., opened the discussion by stating that there seemed to be two classes of men present, viz., the gentlemen who were surgeons and who cared but little about the high or low vacuum tubes, but who looked upon them as a means of accurate diagnosis, and the gentlemen who were doing X-ray work for the surgeons. In speaking of renal calculi he said there were no symptoms that were constant and even one of the more recent text-books, in referring to kidney stone, stated "pus in the urine was the only constant symptom of kidney stone," while on the same page it was stated "pus from the kidney is not a constant sign." This to him showed that aid was required to more accurately diagnose this condition. He said that Dr. Cole alluded to the ray of selective absorption. It was this quality of light and not the quantity which gave the details necessary for accurate diagnosis, and there should be unison between the interruptor, the tube and the coil, and he believed that it was in this unison that Dr. Cole had so well succeeded in his work. Dr. Van Allen had tried to get this ray of selective absorption and said it was very easy to talk about it but harder to get, and he related a case in point. A man gave all the clinical symptoms of renal stone but the ray did not show any, although there was detailed bone, etc. It was only on the third attempt that any stone was demonstrated. The use of an absolutely dark room he believed to be very essential for this kind of work, allowing only a little weak ruby light at times. He used a weak but long development and so did not lose many of the details. He had been using intensifying solutions with success, for it brought out additional details on the plate. He related an instance of a patient with stone in the bladder and the plate was not at all satisfactory, three stones showing faintly. When the intensifying solution was used four stones were plainly shown and later the man presented himself with the four stones he had since passed. He believed older tubes gave better work because of some change in its structure making it capable of better regulation.

Dr. Robert Abbe continued the discussion and said that it had been his experience to always find the stone by radiograph if present, even when so small a one as but eight grains of uric acid; in that instance the stone showed most beautifully with a tube of ordinary vacuum. He had come to the conclusion that any tube that would

Fig. 4.



DR. F. TILDEN BROWN'S SUPRAPUBIC TROCAR CYSTOSCOPE.  
(Used with the same telescopes as in Fig. 3.)

impossible. The lenses in the Nitze cystoscope he considered to be clearer, but so far as the practical working of cystoscope was concerned Dr. Brown's instrument he believed to be superior to the Nitze.

Dr. Follen Cabot said the irrigation attachment could be used for filling the bladder. After the telescope was secured in place it could be filled through this irrigating attachment, running the fluid in one side and out through the other. He said that if the catheters were to be left in place and the instrument withdrawn they should be pushed in farther than usual. He had found that the catheters, unless very small in size, were likely to catch in an attempt to withdraw the Brown instrument, whereas with his cystoscope this difficulty had been overcome by the omission of the separate catheter compartments and other changes in the instrument.

Dr. F. Tilden Brown thanked Dr. Swinburne for his allusion to the points mentioned regarding the proper place on the trigonum for resting the open sheath to promote escape of the distending medium during inter-

give a good bone picture would give a good stone picture, and this conclusion was justified in the instance referred to where an eight-grain uric acid stone was beautifully shown on the plate, which also showed well the transverse processes of the vertebrae. If one could represent the transverse processes on the plate he felt sure that any stone would be shown if present. His belief is that the differentiation of the varying density of soft tissues is a distinct advance in skiagraphy, but that, in the search for calculous material it seems unwise to elicit any differentiation of structures other than bone and calculus. There is not any structure in the body at all resembling in density either bone or stone which by their both containing earthy salts are much alike in density, hence whatever selective ray will take a bone picture will take a stone picture.

He said that this was a subject that appealed very greatly to him, coming as it did to the surgeon's aid within the last five or six years, for he now could prove the presence of renal stones which before were only suspected. He recalled one case that for a year was treated for sciatica, for he presented few urinary symptoms. Microscopical examination of the urine had been made once and only a few blood corpuscles found. The picture taken showed very beautifully a stone in the upper part of his right kidney weighing 15 grains.

A matter of much interest to the surgeon, when he has a skiagraph showing renal calculus, is the fact that in a majority of cases the stone is not in the pelvis of the kidney, but has a separate cavity in the kidney substance from which it often is extracted with difficulty. It has first grown from a crystal formed in a uriniferous tubule at the summit of a pyramid. This grows larger at the expense of the pyramid, until an excavation is created as large as the stone, one corner of which peeps out into the pelvis. When the operator introduces his finger into the renal pelvis he is surprised to find no stone, but a metal probe soon detects a grating which he finds and loses several times—then slips the probe into the calculus pocket, passes a bistourie alongside, slits up the small opening and extracts the stone. One further note is worth recording: That several pyelonephrosis cases have made permanent recoveries, after removal of the large stones, without removal of the kidney.

Dr. F. Tilden Brown said that Dr. Cole's masterly exposition of fine X-ray work, which he explains as due to a perfect adjustment of tube, coil and interrupter so as to yield rays of selective absorption, has been most interesting and instructive. The differentiation of tissue shown in many of his plates by reason of this quality of the rays brings out such a variety of detail, especially the high and low lights resulting from gas and fecal masses in the intestine, that it would not be an easy matter for any except an expert to interpret the whole. It is daily becoming more evident that this branch of medical science can only expect full justice from those who make it a special study. A year ago in the discussion of this same topic he said regarding the value of X-rays in the diagnosis of renal calculus that the method was not authoritative when the radiographic returns are negative, but that it was authoritative when affirmative; that is, where two or more plates, differentiating the normal structures clearly, showed identical abnormal shadows in the region known to be occupied by the kidney which had given the ordinary clinical symptoms of stone. Considerable experience had not diminished this confidence until the advent of a recent patient, in the person of a young Cuban woman, who came to him for operation through the courtesy of Dr. Henna. Before reciting the details he would like to

propose that the two excellent radiographic plates made in Dr. Townsend's studio of this case be submitted now to any one or several of the experts present for interpretation as to whether the shadow represents a stone or not. Now that Dr. Cole reports that this shadow might reasonably be expected to indicate the presence of a stone he would say that, although Dr. Henna had wisely suggested that Dr. Brown should do ureteral catheterization before operating, but he advised against it as unnecessary, in the face of a distinct shadow in two X-ray plates backed by a typical calculous history, being actuated besides in this advice by the fact that several careful microscopical examinations of the urine for tubercle bacilli had been negative. During right lumbar nephrotomy they found the fatty capsule irregularly cicatricial and adherent, on exposing the renal cortex a hickory-nut-sized hard mass was felt in the parenchyma beneath the convex border a little below its center; this was cut down upon, but instead of uncovering a stone it proved to be very condensed tissue. A moderately dilated pelvis was then explored by the finger, and from within this cavity the finger tip was worked into several of the calices. The same finger within the kidney, aided sometimes by the thumb of the same hand or by the forefinger of the opposite hand without, made a searching palpation of the entire organ and the upper two inches of the ureter; in this way several hard spots were felt in the parenchyma, but they were all much smaller than the original one, and although presumably of the same nature each was nevertheless subjected to blunt needling. At the end of this examination they were satisfied that there was no stone in the kidney, nor did the finger or the various metal instruments detect the presence of any fine calcareous matter in these indurated nodules. Palpation of the ureter showed it to be about normal size and far too small to have permitted the recent passage of a calculus corresponding to the X-ray shadow. For three days the bladder urine was much blood-stained. The patient had no unfavorable reaction and the parietal wound was closed on the third day. After convalescence cystoscopy in conjunction with synchronous ureter catheterization revealed a moderately ulcerated right ureter mouth, presenting the typical features of a very chronic tuberculosis, and although additional search has been made for tubercle bacilli in the separate urines without success, we have little doubt but that the X-ray shadow was produced by a condensation of tissue in the right kidney, probably caused by a rather unusual tuberculous process. The fact that this kidney was firmly fixed by a cicatricial state of much of its capsule makes it easier to comprehend how a good X-ray plate could bring out differentiation in the kidney tissue in a way it could not have done if the organ was making the normal excursions incidental to respiration. Dr. Brown feels that in the future cystoscopy and ureter catheterization are to be given greater importance in the corroborative diagnosis of all cases where even affirmative evidence of renal or ureteral calculus has already been had from X-ray and clinical examination. Had he made the ureter catheterization test in the case cited before the operation and learned from it that the left kidney was healthy and the right diseased, he would have been in a position at the time of the fruitless nephrotomy for stone to have done a nephrectomy instead of having probably to subject the patient to this additional operation in the future.

Dr. Willy Meyer said that it seemed to him better to have an X-ray picture taken for diagnosis of renal calculi than to attempt a uretero catheterization. This opinion held good for males as well as for females. He asked the opinion of the reader of the paper regarding



the advisability of blowing up the colon with air, as advocated by some European authority; by so doing it was claimed that the shadows were much better portrayed. Dr. Meyer related the history of a lady, thirty-two years old, who gave a history of calculus in the left ureter. She had a high temperature and presented symptoms of an acute pyelonephritis on the left side, and it was thought best to wait until her symptoms improved before taking an X-ray photograph. The patient got better. On the day set for taking the radiograph she suddenly developed chill and high fever and it was thought best to operate at once. A kidney with a large pelvis was found, brownish-red in color, extremely brittle and, within the cortex, there were found many abscesses.

A smear was then taken and culture test made and the kidney was then split, but no stone could be found, compression being made on the renal vessels. A bougie was passed into the ureter and low down was found an obstruction. A catheter, with an open end at the tip, was introduced and the ureter was flushed with water and the water returned. Whether it was a stone or a stricture that caused the obstruction was not then known. No cystoscopic examination had been made and he did not even know whether there was a kidney on the opposite side. The kidney was drained, the patient improved, but the kidney wound refused to heal. Palpation through the vagina did not reveal any hard mass in the pelvis.

He then catheterized the ureters, using the Kelly method, and it was interesting to him to find an obstruction which he could pass; when passed there followed a gush of about one ounce of urine. The ureter and renal pelvis were irrigated with a sterilized boric acid solution. On pulling back the tip of the instrument to the place of the obstruction he found the water stopped and then again began to flow on further pulling out the catheter, which led him to believe he was dealing with a small pouch in the ureter, probably containing a stone. A waxed-tip catheter, which was introduced afterward, showed a mark. After the patient had improved, an X-ray picture was taken and two stones were shown in the pelvic part of the ureter. The smaller one was passed. The patient was operated upon, an abdominal incision made, and just at the place where the uterine artery crosses the ureter was found the larger calculus. This patient then made a good recovery. Within the last year Dr. Meyer had seen two patients with renal calculi. One was a patient of his own who had an attack of acute retention ushered in by renal colic. A diagnosis of renal calculus was made. The patient also had an enlarged prostate, which was removed by the perineal route. He was about to go West when he was suddenly seized, while riding, with a chill, high fever, prostration and symptoms pointing to renal colic or an attack of appendicitis. Within the next twelve hours he had another chill, high fever and symptoms of sepsis of a most acute character. He was operated upon and in the mucosa of the pelvis of the kidney was found a distinct spot of necrosis where a stone had rested for some time and caused a pressure necrosis. A pure culture of the colon bacillus was made. The other patient had about the same history, was profoundly septic and died six hours after Dr. Meyer saw him. Dr. Meyer mentioned these cases because some thought that the treatment of renal calculi was on the border line of medicine and surgery. He always advised patients suffering from renal calculi to submit to operation, if previous colics were accompanied with septic symptoms.

Dr. Carl Beck said that having succeeded in obtaining an indistinct shadow in renal tuberculosis which was

caused by calcareous deposits in the foci, he tried to determine experimentally to what extent destructive processes in the kidneys could be represented by the Roentgen rays. The result was that a moderate amount of calcareous matter could be recognized by the use of the diaphragm as a light and disseminated shadow in contrast to nephrolithiasis, which cast a darker and more confluent shadow. When no calcareous deposits existed in association with the tuberculous process, skiagraphic representation with our present means seemed to him to be unreliable. In one case a large tuberculous cavity showed at the upper and a smaller one at the lower pole of the kidney which had been bisected. In another skiagraph demonstration was demonstrated the proportional degree of translucency which was naturally more marked at the upper pole. This translucency, however, did not show distinctly if skiagraphed through the abdominal wall, so that it could not be relied on practically. In exploratory nephrotomy, however, this translucency could be ascertained by a fluoroscope surrounded by sterile gauze, so that the foci might be located before the renal tissues were divided.

Dr. Sinclair Tousey said that the radiographs shown by Dr. Cole were excellent and represented an amount of study as to technic which only those of us could realize who have tried to obtain the same results. For large or corpulent patients he had used a board such as was shown for compressing the abdomen. It effected a reduction of two to three inches in the thickness of the abdomen and did not cast the slightest shadow on the plate, and enabled him to extend this method of examination to patients too large to be sure of results in the ordinary way. Very lately a compression cylinder had come into use in Germany, and the picture which he presented, from the *Journal of Physiologic Therapeutics*, illustrated its use. A cylinder, five inches or so in diameter, was placed on end upon the abdomen and the light from the X-ray tube shown down the cylinder. The pressure of the cylinder compresses the abdomen and reduced the thickness of tissue to be penetrated, and the lead lined walls of the cylinder presented all but the direct rays from the anodal disk from reaching the plate. Cutting off all the diffuse light arising from the walls of the X-ray tube was claimed to produce a much clearer picture. The size of the picture, however, was only about five inches in diameter. He said an X-ray picture was not like an ordinary photograph produced by focusing rays upon given points, nor was it like an ordinary shadow. It was really a chart of the relative density of the parts presented upon the plate. For instance, upon a certain part of the plate was cast the shadow of a column eight inches in height and of the density of water and, on another part of the plate, the shadow of a similar column to which a pinch of bone salts had been added. The difference in relative densities, of course, was so slight that it took perfect technic to show it all. He showed, therewith, his radiometer in which by the number of thicknesses of the tin-foil rendered transparent he could determine the degree of vacuum in the tube. He found a mathematical standard like this of the very greatest value in this delicate work. The proper degree of vacuum for renal work would produce a picture of the kind shown in which the flesh and nails were visible, the bones almost black and the internal structure of the bone showing. It represented about No. 3 on his radiometer scale. The radiographs of the pelvis and lumbar region which he had brought for exhibition showed about the right amount of penetration for diagnostic work in the case of suspected renal or ureteral or vesical calculi, the detail shown justifying him in this opinion.

## BOOK REVIEWS.

**DISEASES OF THE INTESTINES AND PERITONEUM.** By Dr. Hermann Nothnagel, of Vienna. The entire volume edited, with additions, by Humphrey D. Rolleston, M.D., F.R.C.P., Physician to St. George's Hospital, London, England. W. B. Saunders & Company, Philadelphia, New York, London.

THE present volume of the Nothnagel series is noteworthy as the contribution of this great German series of text-books on medicine of the distinguished editor himself, Professor Hermann Nothnagel, of Vienna. The original volume in German was one of the earliest of the series and was issued some ten years ago, but this English translation is from the second edition which came from the press only last year. A number of additions have been made by the English editor, among them especially sections on Intestinal Sand, Sprue, Ulcerative Colitis and Idiopathic Dilatation of the Colon. The section on Intussusception of the Colon has been greatly enlarged by the contributions of Dr. D'Arcy Power, the distinguished authority.

In general it may be said that no text-book in English on this subject is nearly so complete as the present volume. Practically every page bears evidence of additions from the English editor's hands. The references to recent English and American literature are especially complete. On one page we note no fewer than six references to American articles, none of which were published prior to 1901. There is perhaps even a tendency to quote too many opinions that are not as yet quite firmly fixed or generally admitted as genuine contributions to medical knowledge, opinions that will require more time and further confirmation or limitation before their true significance can be realized.

With the original material compiled by a German medical clinician and the editorial work done by an English physician it might be thought perhaps that the subject of appendicitis would not receive as full treatment as it is considered by Americans to deserve. This will not be found to be the case, however. The discussion of the subject is especially complete. The conservative attitude of the original somewhat modified by the English editor makes indeed as thoroughly practical a discussion of appendicitis without sensational features as could be desired. The volume is a welcome addition.

**THE THERAPEUTICS OF MINERAL SPRINGS AND CLIMATES.** By I. BURNEY YEO, M.D., F.R.C.P. W. T. Keener & Co., Chicago.

Now that natural therapeutic measures are attracting much more attention than formerly, such books as Dr. Burney Yeo's, with regard to the therapeutic possibilities of the different mineral waters as well as the régime which is practised at the springs and their varying climate environment, cannot fail to be of special interest. For those who are likely to have patients to send to any of the various watering places or health resorts of Europe or North Africa this book will prove an excellent guide. No place of any importance is omitted, and definite information of the kind likely to be looked for by a physician is given with regard to each of them. We have, of course, in this country a variety of climate and of mineral water amply sufficient for this form of therapeutics, but there are those who feel the necessity for something more distant to effect a cure in their cases, and for patients who need the all-prevailing influence of such a suggestion the physician who has not himself had opportunities for wide European travel will, with the aid of this book, be able to pick out the locality likely to be of service.

**CLINICAL TREATISES ON THE PATHOLOGY AND THERAPY OF DISORDERS OF METABOLISM AND NUTRITION.** By Dr. CARL VON NOORDEN, Physician in Chief to the City Hospital, Frankfurt a. M., Part V, Concerning the effects of Saline Waters (Kissingen, Homburg) on Metabolism. E. B. Treat & Co., New York.

THIS series has a very definite practical clinical value that can scarcely fail to commend it to those who are looking for rational therapy for the commoner forms of disease. This number of the series is at least as interesting as others. The variations of opinion as to the effect of salines on the system from the merely mechanical withdrawal of serum, the only action according to some, to the most striking alterative effects as claimed by others, are discussed from the practical standpoint of case histories. Salines have been found useful, especially in superacidity of the stomach, though nervous superacidity is not always relieved. They do good occasionally, however, in acidity, also. On the other hand in spite of the warning at Carlsbad and many other saline springs that persons taking the cure must not eat fat, salines have been found not to hinder but rather to help the digestion of fat.

**INTERNATIONAL CLINICS.** A Quarterly of Illustrated Clinical Lectures and Especially Prepared original Articles, on Treatment, Medicine, Surgery, etc., by leading members of the Medical Profession Throughout the World. Volume II, Fourteenth Series. J. B. Lippincott Co., Philadelphia.

THE present number of the International Clinics contains an especially informing set of articles on the diseases of warm climates. Among them the article by Dr. Mason, U.S.A., on the "Spread of Diseases by Insects, with Suggestions Regarding Prophylaxis," will be found eminently useful outside the tropics also. The series also contains articles on "Malarial Hemoglobinuria" and on the "Etiology of Bilious Hemoglobinuric Fever," that will be of special interest in our Southern States. The last article of the series on the "Treatment and Mode of Life to be Pursued on Return to a Cold Climate by Those Suffering from the Commoner Affections Incidental to a Sojourn in Tropical Countries" should be read with attention by physicians all over the country, since very few medical practitioners of wide experience fail to have among their patients returned soldiers from the Philippines and other American citizens who have come back, with or without the fortune they went to seek, from Cuba, Porto Rico and our other more or less tropical possessions. The rest of the volume is taken up with the clinical lessons quite up to the usual high standard.

**BURDETT'S HOSPITAL AND CHARITIES, 1904, Being the Year Book of Philanthropy and the Hospital Annual.** By SIR HENRY BURDETT, K.C.B. Scientific Press, Limited, London.

SIR Henry Burdett's Manual of Hospitals and Charities is too well known to need anything more than a notice of the present yearly issue. Most of the book of course is devoted to hospitals and other charitable institutions in the British Islands. There is, however, some sixty pages devoted to hospitals in the United States of America, and under the head of Colonial Hospitals, some fifteen pages devoted to Canada. The book will accordingly have more than an academic interest for Americans and at the same time serving as an exhaustive guide and directory for the English medical charitable institutions. Naturally the edition is distinctly defective for American hospitals, some of the most noted being omitted.